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Table of Contents.

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ORIGINAL ARTICLES— Page.

Group Prejudice, by G. Blake-Palmer 815
Hypnotic Analgesia in Childbirth, by H. Steven Greer 819
The Relation of Anæmia of Pregnancy in Fiji to Ascorbic Acid Deficiency, by D. J. Oldmeadow, M.B., B.S., D.G.O. 821
Acute Infections of the Ears in Children, by Richard E. Dunn 824
Acute Upper Respiratory Tract Infections in Childhood, by S. E. J. Robertson 827

REVIEWS—

Treatment of the Child in Emotional Conflict 829
Histological Appearances of Tumours 829
Virus Diseases and the Cardiovascular System .. 830
Recent Advances in Pharmacology 830
Cardiology Notebook 830

BOOKS RECEIVED 830

LEADING ARTICLES—

New Drugs 831

CURRENT COMMENT—

Salicylates as a Cause of Gastric Hæmorrhage .. 832
Corrosion in Metal Used for Internal Fixation .. 833
Bronchography and Peripheral Primary Lung Carcinoma 833
Muscular Effort in Running 834
Biophysical Investigations of Urinary Calculi .. 834
Veneral Disease Legislation 835
Freezing Animal Cells in Dilute Glycerol 835

ABSTRACTS FROM MEDICAL LITERATURE—

Pathology 836
Morphology 837

BRITISH MEDICAL ASSOCIATION NEWS— Page.

Scientific 838

OUT OF THE PAST 840

CORRESPONDENCE—

The Pluriglandular Syndrome with the Report of a Case 841
The Use of Pethidine and Thiopentone by Continuous Intravenous Drip during the Fenestration Operation 842
Bedwetting 842
Occupational Health in Australia 842

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA 843

THE COLLEGE OF GENERAL PRACTITIONERS—

Victoria Faculty 843

NAVAL, MILITARY AND AIR FORCE—

Appointments 843

MEDICAL APPOINTMENTS 844

DEATHS 844

DIARY FOR THE MONTH 844

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 844

EDITORIAL NOTICES 844

GROUP PREJUDICE.[1]

By G. BLAKE-PALMER,

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CUSTOM requires me to deliver and you to endure the annual presidential address to the Association. Several months ago Dr. Ian Martin, our active Federal Secretary, suggested that perhaps the theme of the address might in some way be related to the anthropological symposium of the following day. In choosing to speak on the important if rather neglected theme of "group prejudice" I have been mindful of some aspects which come within the common ground of the psychiatrist and the social anthropologist. I should, of course, add the psychologist and the psychoanalyst, for both have made many contributions to the common meeting ground just mentioned, especially in relation to the study of personality in its cultural setting.

Psychologists, some with medical training and ethnological field work experience like Rivers, had long shown an interest in anthropological material. The study of personality in relation to culture, however, is of much more recent development. Only ten years ago a paper presented to the Chicago Society of Personality Study opened with these words: "Paradoxical as it may seem, anthropologists, although recognized as students of man, have not until recently been much concerned with people." At that time one could with equal justice have said that psychiatrists, though very much concerned with people, especially with individual differences, had been equally indifferent to many problems related to the cultural setting.

Psycho-analysts early entered this neglected field—so eagerly, in fact, that one suspects that enthusiasm outran discretion. Freud and his successors in this field would seem to have been over-anxious in their selection of any anthropological data which might support or confirm analytical theory. They would seem to have been less painstaking in the acquisition of a fuller understanding of the material selected. Enthusiasm for its use as a check on analytical theory was minimal. These weaknesses are well exemplified in "Totem and Taboo", a forerunner of other works claiming a universal validity for certain analytical theories.

It so happens that among the more energetic successors on the psychological aspects in recent times there have been able and persuasive writers whose works appealed to readers little inclined or inadequately equipped to question the sweeping conclusions drawn from an entertaining narrative. Of these "Sex and Temperament in Three Primitive Societies" by Margaret Mead may serve as an example. The factual observations are admirable, as one would expect from Mead's "Manua" studies. Many of the interpretations are simply just too, too easy and pat.

[1] Presidential address delivered at the annual meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

At the present time there are signs of a sounder teamwork between social anthropology, psychiatry and psychology; yet earlier mistaken impressions are hard to erase. But I am already overlong in the prologue and must come quickly to the substance of the address. Anyone who ventures to speak on "group prejudice" to a learned audience such as this should be continually aware of the many pitfalls and traps by which this complex topic is beset. None of us may escape acquiring our own little constellations of stereotypes nourished by preferences or dislikes—and sometimes by self-interest—and fed by unacknowledged fears or even by economic threats. There are indeed few subjects in which the speaker is more vulnerable or for that matter more self-revealing to a discerning audience.

As members of a professional organization, a religious body, a political party, a trade union or any other society, we usually acquire a more or less settled approach or favoured solution for recurring situations or particular problems. "Sooner or later", said Osler, "insensibly, unconsciously, the iron yoke of conformity is upon our necks: and in our minds and in our bodies the force of habit becomes irresistible." So great is the pain of a new idea that we may fail, and often do fail, to inquire other than in a superficial and ease-conscience way into the origin or effectiveness of our preferred responses or attitudes. Especially is this so in the face of prejudice—which I must shortly define—for does not close inquiry often imply the threat or possibility of having to abandon some long-cherished viewpoint or comforting if illusory advantage?

Prejudice, in common parlance, indicates an habitual unfavourable or hostile bias towards its object. Prejudice almost inevitably leads to discrimination. Indeed, it may be defined as "the mental state corresponding to the practice of discrimination". I use the word "discrimination" in the sense of "distinguishing unfavourably" not "distinguishing with fine judgement".

The deeply prejudiced, seeing every member of a disliked and feared group or organization in stereotyped terms, rarely heeds the question: "Do you not think it possible you may be mistaken?" (The iconoclastic agitations of the eighth century, the witch-hunting of the sixteenth century and McCarthyism of the twentieth century provide examples.) Prejudice between groups, however such groups may differ in race, colour, belief or culture, has existed throughout recorded history. It may even be inferred from archæological evidence of those who left no written records. However, the patterns of prejudice and the forms of its supporting formalized mental images or "stereotypes" may undergo many changes. Yet the group's reluctance to believe good of any member of a disliked group, or to believe evil of a fellow member of its own, has been true in all ages. It is certainly true today.

In recent times attention has been unduly focused in the Press and elsewhere on the prejudice patterns and discriminatory practices relating to racial and colour differences. Inquiry suggests that strong prejudice patterns in terms of colour and race rather than of culture, economics and belief, are of fairly recent expansion in most European countries and their daughter States. Looking backwards, we see that the Roman Empire freely conferred its citizenship—with tax demands—regardless of colour or race as early as A.D. 212. The Gospel narrative suggests no racial bar over the three magi, one of whom was traditionally represented as a Negro by mediæval artists. Belief rather than race determined prejudice in the Byzantine Empire. The early Portuguese colonists of India and Brazil mixed freely with the local coloured population. Coloured colonial peoples are socially acceptable on their personal merits in metropolitan France. And let me add that there is no suggestion that King Solomon found any aversion to the Queen of Sheba on colour grounds; like Philostratus ("Imagines, 1.29"), he saw "charming Ethiopians with their strange colouring"[1]

Attention to differences in race and colour varies enormously between countries and societies. Race and colour may readily be linked with class, economic, cultural, religious or historical antipathies. In Jamaica at the present time race is no bar to public office and there is no segregation on these grounds. However, colour is closely linked with class division, and much attention is paid to subtle shades of brown. In Jamaica there is certainly a common language and religious background; but so there is in nearby Georgia, where segregation and racial discrimination are still live issues and may even swing an election.

The degree of attention paid in a community to race and colour differences may well be itself determined by the existence of prejudice stereotypes. Some of the differences to which attention is drawn are in fact very much less in degree than, for example, differences in hair colour in many European communities. Surely red hair is much more striking than some of the subtle shades of brown to which attention is paid in colour-conscious communities.

Prejudice, with its automatic unfavourable discriminations and excessive emotional responses, is commonly attributed to ignorance. Ignorance may not cause prejudice, but either by itself or as a false belief, it is a necessary condition for the maintenance of prejudice.

A common pattern of group prejudice to which we are all liable is that of dismissing or rejecting, with little or no inquiry, cultural institutions or organizations furthest removed from those with which we prefer to identify ourselves. This attitude was prevalent in the classical world. Yet the Greek's attitude to those whom he termed barbarians was not based on colour or race, but on the lack of Greek culture. As soon as the barbarians adopted the customs and ways of the Greeks, neither colour nor race denied them full acceptance. Alexander of Macedon by his example encouraged the intermarriage of his officers and garrisons with certain of the subject peoples of Asia and Egypt. Narses the Eunuch was promoted from the harem to the command of the armies of Justinian in the war against the Goths. Eurybates[1] the Herald was highly regarded by Odysseus.

Reference has already been made to "stereotypes"—fixed automatically presenting mental images readily evoked by specific situations, "stock patterns", if you will, for the group or the institution against which prejudice feeling is directed. Stereotypes commonly take the form of an exaggeration, distortion or caricature of the physical traits and disliked characteristics derived from a few members of the group and freely applied by the prejudiced person to all members. As virtually every member of the group is visualized by the prejudiced person in terms of a stereotype, it not infrequently happens that a particular individual may lack the expected caricature of qualities. The truly prejudiced, however, are more likely to be angered at what they regard as "deception and duplicity" than persuaded of the possibility that they may be mistaken.

Stereotypes are peculiarly immune to reason or demonstration of their falsity. They seldom occur singly. Intemperate condemnation of alcohol and games of chance is often linked with intolerance of ritual in religious observance and a strong suspicion that all pleasure is akin to vice or sin. Persons prejudiced against one race minority will be found to extend their discrimination to others. Minority groups do not readily learn charity or sympathy towards others in the same predicaments as themselves. Not infrequently they find a weaker group to serve as a scapegoat for the release of their own resentments, fears and frustrations.

Though group stereotypes may be illogical, they do reveal a rational basis in terms of the attitudes and expectations of the dominant group towards the lesser and vice versa. They are very labile. They often change their form with surprising rapidity, especially in time of war or civil conflict—for example, the Russians in 1938, in 1942 and in 1946, as portrayed by Allied cartoonists. A stereotype may transfer from one group to another. In the eighteenth century many impoverished Scots migrated to England and did well. They were unpopular. Dr. Samuel Johnson's

[1] Compare Menander:

"The man whose natural bent is good
He, mother, he, though Æthiop, is nobly born."

[1] Homer, *Odyssey*, 19, 246-248: "He was round shouldered, dark skinned and woolly haired . . ."

"Scotchman" and his Scotland were always wrong: "A beggarly Scotchman." "The noblest prospect a Scotchman ever sees is the high road leading to England." "Scotland is only a worse England." Johnson thought—quite wrongly—that the wine was so bad the Scot could not even get drunk: "No Sir, there were people who died of dropsies in trying to get drunk." After his Hebridean journey Johnson relented a little, and speaking of whisky he said: "Now let me see what makes a Scotchman happy." One hundred years later, when Irish labourers were coming to England, stereotypes of the Scot were transferred to the Irish, and some remain.

There are none so blind as those who will not see. A false stereotype may be even more strongly held in a region where a minority group is relatively numerous than it is where that group is more thinly represented. Where the minority group is increasing, latent fear or economic threat sharpens perception of all behaviour corresponding to stereotype. The frequency of such incidents is emphasized by Press sensitivity to its news value. Opportunity to check the stereotype has little influence, for it underpins a community need and a community-sanctioned attitude.

Many groups, especially primitive groups, have preferred to regard themselves in such terms as "the good", "the well endowed", "the elect", "the chosen ones". With naïve pride and some show of logic, those outside the group are more or less denied such qualities. As groups holding similar views come into direct contact, especially for the first time, a situation may develop in which the parties in rivalry mirror each other's attitudes with varying emphasis. Each denies certain valued qualities in the other. For example, in the early sixteenth century the Spanish Holy Office sent commissions of inquiry to America to ascertain whether or not the natives had a soul. Simultaneously the Amerindians were themselves conducting a counter-investigation by drowning Spanish prisoners to ascertain whether and after what interval their bodies would decompose. There are many modern analogies.

Let us examine further some popular beliefs underlying common stereotypes relating to race or other group prejudices. Whence do they derive support? A veritable constellation of false and erroneous beliefs continued to find support in the errors of the late eighteenth and early nineteenth century systematic naturalists and other workers in the biological field. Some of these errors lead straight back to Aristotle, whose physiology once led learned Jesuit theologians into a remarkable semblance of error. (I refer to the matter of what was once deemed licit for a married woman failing to achieve orgasm.)

It was formerly the custom to group the races of mankind into five major races. These were arranged in an hierarchical order. In European treatises Europeans were placed at the top. There was widespread belief in the independent origin of some races and culture. Among such believers was Voltaire, who made much the same type of use of the anthropological material of his day as did Freud a century or so later. Voltaire's views, taken at their face value, were subsequently developed by Condorcet and others and widely read. Thus the indelible nature of many racial characteristics virtually became an article of faith. Even culturally evoked characteristics such as ability to obtain wide satisfactions in commerce, or particular divisions of labour and temperament between the sexes, were thought to be innate or inborn. Such attitudes, still very much alive, containing as they do a little truth, are hard to modify.

Belief in the "blood transmission" of racial and outgroup differences, with or without Scriptural support, easily survived the work of Mendel and his successors. Granted blood transmissions of race differences, it is all too easy to hold with strong emotion that the mongrel outcome of intercourse between the elect and the damned "brings out the worst in both". Curiously enough, discrimination is always in terms of the colour fraction; it is quarter colour, not quarter white. That seven-eighths white should be able to dominate or at least "improve" one-eighth colour never occurs to members of a community where colour prejudice is strong. And where the colour line approaches the economic and class demarcation levels it will be found that as brown takes over from white he keeps a wary eye on black—as is the case in Jamaica today.

Many attempts have been made by observers (of varying capacity and bias) to investigate so-called innate differences in ability between racial groups in a mixed community. For that matter differences between members of the same race at different cultural or economic levels present similar problems. After many years the most important lesson which has emerged from extensive and world-wide studies has been the difficulty of adapting our present methods of psychological testing to persons drawn from different cultural environments. Time and again some unforeseen attitude or way of thought peculiar to the group has intruded to the detriment of the test—for example, Margaret Mead's experience in Samoa with the ball and field problem, in which the æsthetic sense of the Samoan child proved stronger than its incentive to trace the most effective pathway. Again, in word selection the originator of the test can scarcely have foreseen the peculiar setting of some Negro church services or Maori funerals. European funerals are solemn and quickly over; the Maori tangi may last many days; the gathering is large, and gossip, mourning, feeding, drinking and the consequences of non-separation of some sleeping quarters allow a ritual abreaction of grief which sometimes ends in a regrettable affray.

The application of intelligence tests to members of differing culture groups has taught the psychologist almost as much about the fallibilities of his tests as about the comparative capacity of different races of ethnic groups. There is now a general measure of agreement that, though there are wide individual variations and varying distributions of ability levels, all races are represented at most levels of attainment. Smaller groups have little chance of the rare summit frequencies. Such findings being unpopular and contrary to stereotype have hitherto had little apparent influence on related popular beliefs. Findings are dismissed in some quarters by unflattering comment at the psychologist's expense; yet such findings can be dismissed only at peril of perpetuating dangerous or degrading situations in which the dominant group may show up very badly.

Fear of increasing numbers, and resultant economic threats, readily reinforce group prejudice patterns. Stereotypes become harsher. Prejudice is even more strongly reinforced if members of the dominant, if remotely threatened, group set high value on the exclusive possession of some cultural heritage or special mark of divine favour. Such indeed is the historical background to the current attitudes of Afrikaners towards the Bantu. In such a situation a two-way response emerges. The discriminated against soon learn new ways of counter-expression. Much community energy is expended in debating measures to keep the racial outgroup in place. Feeling is often expressed in odd ways. For example, "Cape coloureds" have recently been officially excluded from test matches in South Africa as a result of their excessive partisan support of visiting teams—a subtle way of showing resentment to the home side without committing a legal offence against Apartheid laws.

Race prejudice may be subtly reflected and in fact reinforced in the daily Press. In New Zealand the Maori has complete legal equality with the pakeha or European. All schools are open to both races, and in districts where there are Maori schools European children can and do attend them as a matter of convenience. (The bulk of the Maori population live in rural areas, and seasonal work, appealing to the Polynesian temperament, leads to a continuous ebb and flow between the district of origin and the favoured place of seasonal employment.) In districts where the populations are nearly equal there is considerably more mutual awareness. The birth rate of the Maori is high. Children are prized and often foolishly pampered to their ultimate detriment, for from school age the Maori follows in part the old traditions and tends to leave the children rather much to their own devices. Minor crime, especially in relation to alcohol, is not infrequent, and many Maoris, especially young Maoris, feature rather more in the courts than is the case with Europeans.

There has recently been a comprehensive survey of the attitude of the New Zealand Press to reporting of Maori news with special attention to what the Press terms "the racial angle". The survey covered both news and editorial comment. Some of its conclusions are germane to this inquiry into group prejudice. With regard to crime, it was found that with one exception all the leading daily papers race-labelled crime news even when the offender was only quarter-caste or less. In many instances reference was made almost as a routine to the accused's caste, on the pretext that these particulars appear in the court records. It should be noted, however, that the quarter-caste was quarter-caste Maori, not three-quarters pakeha. The Maori gets the blame and the pakeha gets off. Reporters maintain that the Maori is news; in the case of crime reports I would suggest that he is news because of European stereotypes of the Maori in relation to crime.

Again, in crime reporting there is not infrequent reference to the relatively high percentage of Maoris in prison or Borstal in relation to the total Maori population. Admittedly the figures are unfavourable to the Maori, but not quite so unfavourable as the Press makes them appear. For there is seldom any reference to the fact that in the age groups at which crime is commonest, the total number of Maoris is higher in proportion to the corresponding age group in the European community. For example, in the fifteen to twenty years age group Maoris form 9·8% of the total New Zealand population. In the sixty to sixty-five years age group they form 2·2% of the population. Even so, Maori delinquency rates are high. This fact is frequently emphasized in the Press; the same attitude is not taken over European minorities, or over denominational incidence of crime. Irish or Scottish names are as readily distinguished as Maori names, so ease of identification is not the whole story.

Analysis of editorial comment on Maori affairs clearly reveals another source of discriminatory comment—namely, political affiliations. For the past ten years the four Maori seats in Parliament have been safe for one party, and for three years the Maori members held the balance of power. Political antipathies, especially in rural areas, may be expressed in racial terms.

Race-labelling of news items does not as a rule apply in sport. It does when morals or vital statistics show trends relatively favourable to the European in comparison with the Maori.

Though caste degree is mentioned bluntly in the reporting of crime, caste reference is expressed with the greatest delicacy, if at all, in the obituary notices of distinguished Maoris. For example, in the case of the late Bishop Bennett one paper stated: "The blood of both races was mingled in his veins." However, in the case of Sir Peter Buck, the New Zealand Press Association quoted Buck's own famous reference to his half-caste origin: "Any success I may have achieved has largely been due to my good fortune in being a mongrel." I am quite sure our Press would have made no such reference without the excuse of Sir Peter's own authority. New Zealanders take considerable pride in achievements of the distinguished Maoris. With these examples from the Press of a country which enjoys relatively good race relations, no wonder crude prejudiced stereotypes gain wide publicity in less healthy atmospheres.

In the daily Press and weekly periodicals race or group discrimination can be so subtle as often to pass unperceived for what it really is. Nevertheless such articles achieve a purpose in fostering stereotypes. In some cases they depend on stereotypes for their circulation.

In New Zealand our cartoon Hori (the generic name for any Maori) is in fact a fairly benign and good-natured stereotype, not very far removed from real types.

Joliffe's witchetty-grub women remind me of a comment Wertham makes in his "Seduction of the Innocent"—that coloured women may be represented in compromising situations and in a degree of nudity which would constitute a breach of United States postal regulations if applied to white women. The inference is obvious—the coloured have lower standards: a common stereotype and one which leads to exploitation in some communities for sexual gains.

Prejudice reactions on a stereotype basis can arise with extreme rapidity. In 1943, when I was serving with the British Military Mission to the Royal Greek Army, a political *coup* was effected in the Greek forces in Syria and Palestine which led to a forcible change of composition in the Greek Government in exile. At the Greek General Hospital on the day after M. Panayiotis Canellopoulos had failed to achieve conciliation and had hurriedly left the hospital,[1] almost every patient subsequently declined the services of the radiologist who was a supporter of the defeated faction. The radiologist was previously popular and professionally competent; yet the soldiery could not get past the political stereotype.

Another and more recent example was related by Sir Edmund Hillary concerning the events on the last two days of the return of Sir John Hunt's party from the successful Everest climb. Two days from Khatmandu they were met by a well-organized group who closeted themselves for hours with Tensing. Later, Tensing, who could neither read nor write, put his mark, or is reputed to have done so, to a document. From then on at every village crowds supported by banners and loud speakers hailed Tensing. Almost as an afterthought Hillary was asked to come forward, only to be greeted by silence. Banners across the route showed Tensing on top and a rope at the end of which an exhausted figure was supported. The organizers of the demonstration knew all too well how to exploit the desire of the Nepalese, under political suggestion, to feel that an Asian had achieved what Europeans had hitherto failed to do. Stereotypes were very rapidly elaborated and exploited for political ends.

In a community in which group tension supported by stereotypes and prejudice is allowed free play, the way is always open to the clever manipulator to exploit the ready-made block votes which such a situation opportunely favours. There is thus a vested interest in preserving the life of differences which divide sections of the community into more easily managed groups.

There are always some whose interest it is to foster prejudice and instil it early in the young. The child readily acquires the preferences, attitudes and dislikes current in its early environment. Learning prejudice is easy; unlearning it all too often requires effort, and the effort seldom seems worth while. If more realized that prejudice often harms its hosts as much as or more than its victims or scapegoats, perhaps progress might be made. But people are all too seldom willing to admit that they may be mistaken, an experience as common today as it was in Cromwell's time.

Psychiatrists should of all groups be well fitted to advise on a social and educational programme to minimize the evil of group prejudice. Are not they and those for whom they care professionally themselves the target of much foolish stereotyping? Perhaps it is as well for us to study our own record and see whether in fact we come out any better than the politician, the racist or the denominational leader.

There are some good points in the record. Nearly 150 years ago psychiatrists began to reapply a neglected yet more enlightened older policy to the care and treatment of the psychotic. Rapid advances were made in institutional care and legal safeguards. Despite many administrative obstacles, this work was early applied in Australia, as is admirably recorded in John Bostock's "The Dawn of Australian Psychiatry". However, it would seem that the early impetus of this movement slowed down. There are some indications that the deceleration may have been less pronounced and of shorter duration in New Zealand, which had the good fortune to have a more favourable population pattern and to be less subject to internal political pressures.

At the turn of the century a reorientation of psychiatric thought came about largely as the outcome of the earlier works of Freud and his many associates. Some of the

[1] Having been subjected to some indignities.

conclusions based on a study of neurotics in a highly specialized central European society were found to be capable of application in many other societies. Perhaps the impact was less immediately felt in Australia and New Zealand than in Europe or America. Nevertheless many of the lessons of psycho-analysis were imperceptibly absorbed, and indeed have become part of our culture.

In both Australia and New Zealand psychiatrists were relatively quicker to seize upon the practical advantages offered by new methods in physical treatment which quickly followed the success of Warner-Jaureg's malarial therapy. This had originated in his routine investigations into the unusual freedom from general paralysis of the insane of regular Austrian officers who had been stationed in Bosnia and Herzigovina. Subsequently insulin therapy, electroshock treatment and surgical procedures were adopted with very little time lag. For example, in New Zealand leucotomy has held a recognized place as a permissible procedure in State hospitals since 1942, and there has been no untoward Press or other adverse comment from non-professional groups over its adoption. Relatives rarely oppose and may even suggest such measures.

So far, so good. There are, however, some present-day stresses and attitudes which, both from within our ranks and from without, may disturb or threaten cohesion and allow prejudice patterns to intrude to our detriment. I have chosen three points for attention. The first concerns scientific and therapeutic differences.

Psychiatry, dealing essentially with persons, covers the widest of all the fields of medicine. Therapeutic weapons at our command are many and varied. Their target is the whole patient.[1] But our therapeutic procedures vary as much in their precision and indications as do the rapier and the blunderbuss. The methods, the indications for their application and the prospects of their success are so variable that, in our present state of knowledge and experience, there is ample room for honest differences of opinion within a framework of ascertained fact and experience. Many subtle and sometimes unsuspected factors may determine the success or failure of a given method. Even the most amateur therapist may sometimes claim success when others more experienced have been less fortunate. Such chance achievements, unless corrected by a fuller appreciation, may lead to a persistence in method regardless of circumstances, much as an adult will continue a childhood "coping mechanism" no longer appropriate.

Nevertheless, sound clinical judgement, born of that happy ability to discern the heart of the matter clearly, will often warn us against the choice of many procedures and will determine the employment of measures more likely to achieve success. It will also stay the too hasty pressure on the push-button or what is infinitely worse, the too ready contemplation of surgery too soon after intensive physical treatment. It is often wiser to allow time to pass before impatiently seeking to impose an irreversible procedure on a reversible disturbance already aggravated iatrogenically.

While there is room for much honest difference of opinion, it is desirable at all costs to avoid the intrusion of prejudices and the taking up of "either-or" viewpoints. Do we always have sound insight in regard to our favoured methods and procedures? There is a strong temptation, born of success, to exaggerate the value of methods at which we ourselves excel or for which we have a special preference or aptitude by inclination, temperament, experience or situation. We may be inclined to overlook the evidence that in other hands other ways may yield comparable results to our own.

Let us beware lest our favoured methods and measures insidiously acquire the force and form of an article of faith. Therein lies the danger that we may begin to spend too much time in observing, doubting and finally judging the fellow cripple who has another way of walking along the pathway of therapy.

For the most part our criticisms, doubts and mental reservations of opposing views and methods are professionally cloaked in polite or technical phrases, garnished with a relish of concern for the patient—or perhaps they may be based ostensibly on scientific grounds, to which emotion or a suspicious strength of feeling sometimes attaches. This is a form of criticism to which the analysts have found themselves at times excessively exposed. It follows fairly well-defined lines. For example, it may well be possible to demonstrate fallacies in the universal application of some aspect of analytical theory or concepts; or perhaps too elaborate a superstructure may have been erected on too slender a foundation. Some of the conclusions in "Totem and Taboo" are a case in point. Again, at the present time there have been several well-reasoned and critical reexaminations of Freud's original treatment of the Œdipus myth. The best of these perhaps is Galdston's "Sophocles contra Freud". Yet it hardly follows that one must necessarily reject all the other parts of the analytical system merely on the grounds that some excessive claims have been seriously impugned or have become untenable. It is as well to remember that many beneficial measures have derived from erroneous theories, and among them are some utilized by those who may be highly critical of the analysts.

Sometimes the more eclectic psychiatrists, who make fuller use of physical means of treatment, are too ready to sit in judgement on the pure psychotherapist or analyst. The analytically orientated in turn mirrors this attitude by an excessive reluctance to take advantage of any physical short cuts. Both attitudes are showing signs of modification for the better.

Julian Huxley expressed these mechanisms very aptly in a series of verses, one of which reads:

> The crab to cancer minor gave advice
> Know what you want my son and then proceed
> Directly sideways. God hath decreed
> Progress is lateral—let that suffice.

Lateral progress may well be, but not unilateral.

My second point is our familiar enemy "the stigma"—a survival of fears, false beliefs and other ingredients of the prejudice stereotype, which still attaches itself with great tenacity to psychiatric hospitals by whatever name they may be designated. It goes without saying that past and present patients, their families and to some extent those concerned with their welfare, have too long endured its manifestations. There is nothing of the mark of divine favour in this stigma.

With the stigma, as with all prejudice, there can be degrees of discrimination, and some seek personal immunity by sheltering in some zone of partial protection, content, it would seem, to allow others less favourably placed to combat their difficulties as best they may.

I think all will agree that no stigma, real or imaginary, should attach to any form of psychiatric illness or to any medical organization which concerns itself legitimately with the treatment and rehabilitation of the mentally ill.

Like all prejudices, the stigma is often more expensive to those who support it, or who acquiesce in its continuance, than is generally supposed. Many of our larger mental hospitals have been expensively sited in remote situations where staffing is difficult on grounds that could not be rationally accepted but for the widespread existence of stigma stereotypes. The cost of prejudice falls all too often on the prejudiced themselves as well as on their scapegoats.

There is today, in some circles, a perceptible tendency to be somewhat more active in seeking the removal or denying the existence of the stigma when a disorder is treated in certain selective centres of psychiatric endeavour. Thence it is but an easy step to encourage a modern variant of an old theme: the "stigma-negative" clinic for psychoneurotics and psychopaths and selected psychotics, and the "stigma-positive" hospital for more troublesome and difficult psychotics and for persons with the grosser forms of amentia and dementia. A healthy corrective to these trends is to be found in "World Health Organization Bulletin" Number 73.

My third point concerns teaching. There are welcome signs that far more thought is now being given to the

[1] Primarily, of course, his mental activities; but these may be approached through the body.

teaching of psychiatry in medical schools at an earlier stage and with a more generous time allowance than was the case in most schools only a few years ago. Perhaps at undergraduate level it will be more accurate to say that more attention is being directed to "the psychiatric approach" upon which considerable effort is properly being focused. Nevertheless, granted this sound emphasis, none may safely deny that prejudice can and does intrude in support of preferred methods or in making a case for the rejection of others for which the teacher may have a less lively appreciation.

Medical students in the early part of their career share the prevailing attitudes and viewpoints of the cultural levels from which they are drawn. They also share community attitudes towards mental disorders, and no doubt acquire others prevalent in their particular courses from their heavy preoccupation with somatic and organically orientated teaching in the early part of the syllabus. Again, remember the advice of Huxley's Crab to "Cancer minor".

It is therefore particularly important that the greatest care should be taken to preserve a broad approach to the teaching of psychiatry, with special emphasis upon its wholeness and anathema to group differences within its ranks. Both the out-patient clinic *cum* hospital psychiatric ward and the community mental hospital have their important parts to play, in much the same way as the surgical out-patient department and the casualty department are complementary to the surgical unit, the rehabilitation centre (and the post-mortem room). It is important that the student should, at an early date, be encouraged to shed his many culturally acquired prejudices with regard to mental disorder. At least he should be able to appreciate that an important objective of mental health acts is to provide a means of treatment and rehabilitation in a hospital community, and not to "put away" for mere custodial care. Mere avoidance of certification is not meritorious of itself. He should come to appreciate that when circumstances require a legal procedure such as certification or voluntary admission, it is primarily with a view to facilitating treatment or protecting the interests of the patient, his family or the community. If the student is not firmly persuaded of this himself, he will have little prospect of successfully handling the relatives or the family when it is his obvious duty to advise that practical steps be taken to deal with the patient's problem.

Above all, it is desirable that students come to regard the psychoneuroses, the psychopathies and the psychoses as differing patterns of personal adaptation to environment and the situation. In dealing with such patients and relatives students must not betray an attitude of indifference to or disdain for the real fears which threats to personal identity and integrity engender.

It is too late to effect radical changes of orientation in some of the older generation of practitioners, whose attitude from the patient's point of view has been all too clearly described by John Custance in his "Adventure into the Unconscious" and in his "Wisdom, Madness and Folly". It will be most unfortunate if a new generation leaves our medical schools regarding psychiatry as divided into three parts—the out-patient clinic *cum* general hospital ward, the analytically orientated, and the State hospital practitioner, all (and his patients) with their own prestige labels and degree of "stigma".

There remains a problem of values which requires the aid of philosophy. Can one entirely disregard widespread claims attributing a special nature to mental illness? To those who move in academic circles, where prestige and intellectual powers are closely linked and highly valued, any impairment of mind may occasion especial attention with perhaps a tinge of derogation and a note of uneasiness. Let us at least all agree to persuade our students that the stigma of uneasy humour or light-hearted contempt ill befits a medical practitioner, and must yield to a more charitable recognition of grave illness, an appreciation of distress, and understanding on recovery. Too often it is the recovered patient who has to ease the self-consciousness of his friends as to "where he has been".

I have already been long in both prologue and substance and can only shorten your penance by brevity in summing up. If I have been over long hitherto, it is from deference to Horace and his warning that "when I seek to be brief I become obscure".

It has been my endeavour to draw attention to the many insidious ways in which stereotypes and prejudice may act to the detriment of group and community relations. It is easy to point out the cost in mental energy, in time, in money and in suffering which common stereotypes commonly incur. It is far more difficult within the brief compass of a summary to select with any pretence to relative importance the several ways and means whereby the evils of prejudice could be minimized.

One must, however, distinguish between strongly held opinions which are founded on ascertained and demonstrable bases, and even more strongly held opinions deriving from stereotypes and reinforced by supporting fears which such devices frequently conceal.

I would agree wholeheartedly with the analysts (and the Jesuits) that the early formative years (whether in the nursery, or for that matter in the medical school) are of great importance—though some do overcome the handicaps of upbringing despite natural inertia and the pain of new ideas. Self-examination may, in exceptional persons, yield new insights. It may even lead to the reexamination of cultural stereotypes and thus to a healthier attitude towards current discriminatory practices. If a leader of opinion is so fortunate, some of his followers may also be converted by imitative example.

The provision of accurate information concerning matters over which prejudice is rife may obviously help and should always be attempted. Against this must be weighed the personal, economic and prestige advantages—however illusory they may be—which prejudice so often appears to offer. Yet "to know requires exertion, it is intellectually easiest to shirk effort altogether by accepting phrases which cloak the unknown in the undefinable".

The fears of the dominant group in relation to some minority groups can to some extent be countered by the exposure of their false or slender basis. Sometimes it is possible to instil the suspicion that the minority group is serving merely as a scapegoat for fears and frustrations. However, the basis of such fears and frustrations can as a rule be dealt with only by wider social measures for which the psychiatrist cannot do much unaided.

Legislation to curb or penalize racial and other group discriminatory practices has had more favourable results than many suppose. It may not change basic attitudes, "for the man convinced against his will is of the same opinion still"; yet legislation has often deflected the grosser expressions of prejudice in violent action. A minor example: the word "scab", so provocative to assault in union circles, now may cost a New Zealand worker £2 if used as a term of abuse in certain situations.

It is also helpful if groups within the community can be persuaded of the extent to which their obstinate prejudices may serve the purpose of skilful manipulators of opinion.

There is one field in which the psychiatrist has a more definite responsibility—namely, in dealing with prejudice which arises as an expression of an inadequate or distorted personality.

But I suggest that efforts must be concentrated more on the early formative phases, in which prejudice is culturally transmitted in such a manner as to be imperceptibly acquired. Parents are often all too ready to instil their own fears and false beliefs, and few children are immune to such influences in the home and in the school. Is it too much to hope that over two generations it may prove possible to reduce the immense burden which prejudice imposes on the energies of the community? In this respect I am both optimistic and sceptical. I am sceptical of many of the lip-service devices and narrowly based appeals, by which efforts have hitherto been made to oppose or neutralize our many dangerous and deep-seated prejudices towards those who differ in colour, race or cultural back-

ground. I am sceptical of the good faith of some who seek to cut themselves off from the rest of the community by erecting group barriers to free participation in the community life. I am optimistic when recalling how some prejudices which once divided the whole civilized world are today only a matter of academic interest. It is true that the mechanisms have for the most part only been transferred to objects of greater immediate interest in our present-day society; but it is always a source of hope that some old sources of divisions have seemingly healed.

As psychiatrists we have opportunities to use our skills and knowledge in various ways which may effect some lessening of the evils of group prejudice. We can at least endeavour to recognize its subtle forms and instil the leaven of doubt into the false certainties of stereotype. But few respond readily, and it would seem that "the evils that wilful men themselves procure must be their schoolmasters".

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HYPNOTIC ANALGESIA IN CHILDBIRTH.

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ALTHOUGH various reports on the use of hypnosis in childbirth have been published overseas, a search of Australian medical literature on this subject has failed to show any such report. The writer, a general practitioner, will present a case report of a woman delivered by himself under hypnosis; a review of the available literature will be made, and the advantages and disadvantages of this method under the conditions of general practice in Australia will be discussed.

Historical Survey.

Hypnosis is one of the oldest of medical arts. It was used in ancient Egypt in "sleep temples", which became so popular that they spread throughout Greece and Asia Minor. With the advent of Christianity, trance states were considered witchcraft, and thus hypnosis was dealt a severe blow. Modern hypnosis began in the nineteenth century with such men as Liebault and James Braid. Liebault founded the Nancy School and developed the theory that suggestion was the key to hypnosis. To James Braid we owe the term "hypnotism" (from the Greek *ὕπνος*, meaning sleep). The first surgical operation in which hypnosis was used was performed by Recannier in 1821.

About 1890 this form of therapy began to come into its own, and many famous medical men such as Bernheim, Charcot, Freud, Babinsky, Janet and Pavlov accepted its validity.

Hypnosis suffered a setback in popularity after World War I, mainly owing to the growth of the psycho-analytic movement; but a revival of popularity has occurred since the last war, when its value in the treatment of "combat fatigue" and other war neuroses was established. The British Medical Association (1949) has given hypnosis its blessing in stating that "there is no evidence that in capable hands hypnotism carries with it any physical or psychological danger to the patient . . . hypnotism might well be employed more widely than it is at present".

Report of a Case.

Mrs. H., aged twenty-one years, a *primipara*, was first examined when eight weeks pregnant. Routine blood tests and a chest X-ray examination were carried out, and the possibility of having her baby under hypnosis was discussed with her. She talked it over with her husband and he agreed that this be attempted. She had her first session at sixteen weeks. A suggestibility test was first tried; the method used was the hand-clasp test described by Wolberg (1948). This was successful, and in this first session the hypnoidal state was induced only. She was then told to report back in four weeks for routine ante-natal examinations, and further hypnotic sessions were held at intervals of eight weeks. After two further sessions a medium trance was obtained, and this was considered deep enough for the purpose in view, so that no attempt was made to deepen the trance subsequently. The method used to hypnotize the patient was that of hand levitation described by Wolberg (1948), which has the advantage of not making the patient dependent on the hypnotist as it permits of a participation in the induction process by the patient. This method is somewhat more time-consuming than the more direct authoritarian trance inductions; but it was thought that by using the hand-levitation method the chief objection to the use of hypnosis by psychiatrists—namely, the creation of a dependency relationship—would be met.

Five sessions of hypnosis were held during the ante-partum period, and a total of two hours thirty-five minutes was spent in these sessions. Under hypnosis, the patient was told that labour would be a pleasant, exhilarating experience, and that she would feel no pain whatever, but that she would be an active participant in childbirth and would be aware of the whole process. She was taught to relax completely, to bear down when she felt contractions during the labour, and to go into a trance state at a given command when labour began. Apart from these hypnotic sessions she was given one lecture (whilst awake) on childbirth and labour, in which all the necessary details were explained to her.

Her pregnancy progressed satisfactorily; the urine, blood pressure and weight were all normal, the fœtal heart beat was heard, and the baby's position was left occipito-anterior. When labour commenced, the patient was admitted into hospital, where instructions had been left to call the writer immediately. The patient was examined, and her os was found to be dilated sufficiently to admit two fingers. She was then hypnotized and labour progressed satisfactorily. She bore down with each contraction and remained relaxed and comfortable. The first stage of labour lasted seven and three-quarter hours. It was not necessary for the writer to stay with her during this stage, as her trance state remained undisturbed by labour. During the latter part of the second stage, however, the violence of the contractions partially woke the patient, and it was found necessary to give her 100 milligrammes of pethidine and rehypnotize her when the writer arrived back at the hospital; at this stage the head had passed below the level of the ischial spines. Further progress was uneventful; an episiotomy was performed, a healthy male child was delivered and four sutures were then inserted. The duration of the second stage was forty-five minutes. The placenta was then expressed, and the mother was awakened from her trance. She felt relaxed and fresh. Upon being questioned later, she said that she had felt uncomfortable only for a few minutes in the latter part of the second stage (when she had partially awoken from her trance), and that she had felt no pain whatsoever when the episiotomy was performed and the incision was later sutured. She found childbirth a pleasant experience, and announced that she wanted her next child delivered under hypnosis. Subsequent interviews with the patient and also with her husband have revealed that she has a warm maternal affection for her son, and that no emotional changes of any description have occurred.

Discussion.

The terms used above for trance depths require explanation. By "hypnoidal state" is meant a state of drowsiness, of heavy sensation in the extremities and some suggestibility. "Medium trance" is characterized by automatic obedience, partial analgesia of various parts of the body, catalepsy of limbs and eyelids and disturbances of

cutaneous sensations on command. Simple post-hypnotic suggestions will be obeyed in this stage, and these were used to test the depth of hypnosis. However, care was taken not to give any suggestion which could have been embarrassing for the patient.

It has been estimated by various authorities that as many as 90% of people can be inducted into a trance state, and that approximately 70% are capable of achieving a medium trance (Hull, 1933).

Michael (1952), who hypnotized 30 unselected patients, shows that 76% had completely painless labours—hypnosis failing in two cases out of 30. Kroger (1943) reported success in 11 out of 12 patients who were delivered under hypnosis. Earlier workers obtained similar results—for example, Schultze-Rhonhof (1922) claimed success in 79·4% of 120 cases.

An interesting point is the discovery by several workers that hypnosis shortens the duration of labour. Michael (1952) found that the average duration of the second stage in 30 hypnotized patients was thirty-seven minutes, whereas in a control group of patients similar in age, parity *et cetera*, the average duration was eighty-eight minutes. Abramson and Heron (1950) compared 100 patients delivered under hypnosis with a control group of 88 patients, and found that by hypnosis the first stage of labour was reduced by an average of 3·23 hours in *primiparæ*, but that the difference in duration of the first stage in *multiparæ* between the hypnotized and control groups was not significant. The shortening of labour is presumably due to the ability of the patient in a trance state to cooperate fully in pushing the baby down, and to achieve complete relaxation when required.

The question of when to hypnotize the patient and during what period the presence of the hypnotist is required is important. Michael (1952) advises that when labour is well established and the cervical os dilated to admit two fingers, the patient should be put in a trance state. Under Australian conditions, the maternity hospital often notifies the attending doctor only when the head is practically visible, and it is essential to leave strict instructions to the hospital staff to ring the doctor upon admission of the patient. If the patient is hypnotized early as Michael advises, the doctor can then leave, provided that the patient is told under hypnosis that the sister will perform certain procedures such as a rectal examination, listening to the fœtal heart *et cetera*, and that these examinations will not awaken her. The nursing staff can be trained to cooperate by being quiet and very gentle, and by informing the patient before attempting any manipulative procedure. Under these conditions it will not be necessary for the doctor to return to his patient until he is informed by the sister that the os is fully dilated. It is necessary to remain with the patient during the whole second stage in order to reinforce the depth of the trance state by repeated suggestions. This was unfortunately not done in the case reported, and the result was that it was found necessary to rehypnotize the partially awake patient. The necessity for remaining with the patient continually from the beginning of the second stage onwards is perhaps the most serious disadvantage of this method of analgesia. It is true that the busy general practitioner would find this difficult; but it should be remembered that if Read's "natural childbirth" method is followed, the same disadvantage applies.

Has hypnosis any advantages over the "natural childbirth" method of delivery? It is not within the scope of this article to provide a detailed answer to this important question. However, several observations can be made. Read (1950) holds that the simple sensations of uterine contractions are misinterpreted by the thalamus as pain, and that by education this misinterpretation is corrected and the patient feels no pain. While it is undoubtedly true that painless childbirth can often be achieved by this method, it is nevertheless open to doubt whether the foregoing theory explains the real reason for the successes recorded. Many workers, such as Abramson and Heron (1950) and De Lee (1955) believe that suggestion *per se* plays the major part in Read's method. If this is so, hypnosis is simply the technique Read advocates taken a step further by increasing the power of suggestion via the trance state. One advantage of hypnosis would seem to be that if it is possible to put a patient in a trance state (which test is carried out in early pregnancy), then analgesia during delivery is almost certain, whereas the success or failure of the "natural childbirth" method cannot be foreseen during the ante-natal period. Of course, only a certain percentage of patients can be hypnotized; but it is thought that the figures quoted, such as Michael's (1952) 76% of completely painless labours in an unselected series of cases, compare favourably with figures given for Read's technique.

Conclusions.

1. The main disadvantage of hypnosis as a method of analgesia is that it involves more time than the average general practitioner at present is able to devote to his obstetric patients. However, it does not involve more time than is needed for Grantly Dick Read's technique, and as this method is being practised by more and more doctors, it will be seen that the time factor can be overcome by some reorganization of the daily schedule. Michael (1952) tackled this problem by hypnotizing patients as a group after two sessions with each patient alone; this, however, would probably not be suitable for patients in private practice. A further disadvantage is the necessity for teaching nursing staff the correct method of handling patients in a trance state; but it was found in practice that this is fairly easy, as most sisters are very interested and eager to cooperate. Most practitioners have little or no experience of hypnosis and may feel that they cannot induce a trance state. However, it is not difficult to acquire this skill, which is certainly within the reach of many medical men.

2. The advantages of hypnosis are numerous. Fear, pain and apprehension before and after labour can be eliminated; it is possible to allow the mother to experience sensations of childbirth without attendant pain; the patient can cooperate fully, relaxation is complete, and as a result maternal exhaustion is minimized and the actual duration of labour is shortened; the undesirable effects on mother and baby of chemical anæsthetics are avoided by hypnosis; controlled experiments suggest that the percentage of successes is at least as high as when patients are delivered by the "natural childbirth" method. Finally, it is thought by many workers that the mother-child relationship is enhanced, as the mother retains no unpleasant memories of the childbirth, and therefore has no cause consciously or unconsciously to blame the baby for any suffering she may have experienced.

Summary.

A case report of a woman delivered under hypnosis is given. The results are discussed in relation to the findings of overseas workers on this subject. The advantages and disadvantages of hypnotic analgesia in childbirth and the practicability of its use under conditions in this country are considered.

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THE RELATION OF ANÆMIA OF PREGNANCY IN FIJI TO ASCORBIC ACID DEFICIENCY.

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IN Fiji there exist side by side two races, Fijian and Indian, who show a pronounced contrast in their incidence of pregnancy anæmia; this occurs almost entirely in the Indian race. Conditions of local environment and climate are similar for the two races, but the diets show considerable variation, and an attempt has been made to relate this difference in diet to anæmia in the Indians.

SEASONAL INCIDENCE OF PREGNANCY ANÆMIA.

As has been found in India and some other parts of the world, pregnancy anæmia here in Fiji has a definite seasonal maximum incidence, although severe cases have first come under notice during all months of the year. The main peak of incidence, which may vary slightly from year to year, appears to come between July and October, with a second peak in March. For example, during 1954 all the cases of anæmia in which the hæmoglobin value was less than six grammes per 100 cubic centimetres of blood occurred between August and November. Inquiry into the diet suggested that the only appreciably variable factor in a seasonal basis was the ascorbic acid content, and so some investigations were carried out to see if there was any vitamin *C* deficiency in either race, if it was seasonal, and if it had any relation to the anæmia.

During 1953 and 1954, estimations of ascorbic acid in the urine were carried out on a group of Fijian and Indian patients. It was necessary to make the whole procedure as simple as possible. Urine was taken and tested for ascorbic acid content soon after the patients' admission to hospital. The patients were given 500 milligrammes of ascorbic acid per day, and urine tests were repeated daily until excretion of ascorbic acid, and presumably tissue saturation, occurred.[1] Patients were all given the ordinary ward diet, which includes a fairly liberal slice of fresh papaw daily, milk and meat.

There were 131 Indian patients who excreted ascorbic acid before the fourth day. Thirty-two of these had hæmoglobin levels less than nine grammes per 100 cubic centimetres, three of them had hæmoglobin levels less than five grammes per 100 cubic centimetres.

Forty-three Indian patients did not show saturation with ascorbic acid until after four days had elapsed. Of these, 32 had hæmoglobin levels less than nine grammes per 100 cubic centimetres, and eight hæmoglobin levels less than five grammes per 100 cubic centimetres.

SEASONAL INCIDENCE OF ASCORBIC ACID DEFICIENCY.

September was the worst month for this year, 14 out of 33 Indian patients not excreting ascorbic acid until the fourth day or later.

It would appear justifiable to draw the following conclusions from the foregoing results (as shown in the tables): (i) There is no appreciable vitamin *C* deficiency or anæmia in the group of Fijian patients studied. (ii) There is very considerable vitamin *C* deficiency and anæmia in the group of Indian patients studied. (iii) The vitamin *C* deficiency in the Indian patients is associated with a higher incidence and severity of anæmia. (iv) There is a seasonal incidence of the vitamin *C* deficiency in its most severe form, which in this year came in September.

Ideally, one would have liked to have investigated larger numbers of patients for ascorbic acid estimations, but there were difficulties, particularly in the pressure upon bed accommodation. The maternity annex has only 25 beds and last year delivered nearly 1400 babies, so that normal patients are generally not in hospital for longer than three days. For this reason the selection of patients was made from those who for various reasons had to remain in hospital for longer periods—those with toxæmia or anæmia, those who had required sutures, and those with premature babies.

Apart from a small percentage of abnormal and emergency patients, those delivered in the hospital had previously attended the ante-natal clinic, where they were instructed in the diet necessary and given iron tablets as a routine procedure. Hæmoglobin tests were performed as a routine measure by examination of a drop of blood taken into copper sulphate solution standardized to show *plus* or *minus* 72% hæmoglobin value. Patients whose hæmoglobin level was below this were given double doses of iron, checked carefully for other significant factors and put in a special anæmia clinic. If they were still not responding they were investigated further if possible, or if not they were given folic acid tablets by mouth as well as iron.

Most of the patients with the most severe anæmia had never attended the ante-natal clinic, but even so it was disappointing to see quite a number of clinic patients with severe anæmia. Often close questioning revealed that they had not been taking their iron (they often complained of abdominal pain, vomiting or diarrhœa, even with ferrous gluconate). In many of these cases attendance at the clinic was most irregular. Nearly all patients were drawn from an area within 15 miles of Suva.

DIET.

Fijian Group.

The mainstay of the Fijian diet in most cases is starchy root vegetables (dalo, yam, sweet potato and tapioca), and also breadfruit. Various kinds of dark-green leafy vegetables are also widely used, especially dalo and bele leaf, and coconut is used freely in the cooking process. Shellfish of all kinds are very widely consumed. Money, if available, will be spent on bread, sugar, tinned or fresh meat or fish, and most Fijian families appear to have a really good meal of meat or fish at least once or twice a week.

When leaves are being cooked they are added to boiling water, not boiled for more than five minutes, and then eaten as soon as possible. Fijian people are partial to citrus fruits and bush lemons are eaten raw and also added to food, especially to fish.

Surveys carried out by the Department of Nutrition here showed that the average daily vitamin *C* content of the diet of one typical Fijian village was 300 to 400 milligrammes *per capita* on a raw food basis.

Indian Group.

The Indian diet consists almost entirely of rice (partly milled), sharps (a wheat fraction obtained in flour milling) and dahl (or lentil). Ghee (a milk fat product) is used by those able to afford it, otherwise a vegetable oil substitute (produced locally from coconut oil) is used. Milk is used more than among the Fijian group, and eggs are used occasionally. Meat is not largely consumed. A fair section of the community is vegetarian, and amongst the others who say that they are meat eaters close questioning reveals that their consumption is in many cases a small serving once a week. Most of their food is eaten as "curry" and cooked with strong condiments including ground chilli and mustard oil. It is cooked for long periods of time, then often left standing for a further long interval, and even when long beans and other vegetables are used it is difficult to imagine any vitamin *C* content being preserved by the time the food is eaten.

A survey by the Department of Nutrition among poor families in the Suva area showed an average daily vitamin *C* intake to be 40 to 50 milligrammes per head on a raw food basis; but apart from raw fruit intake, very little of this would be available in the cooked food.

Comparing and contrasting the diets and eating habits of the two races, one might say that both are very largely carbohydrate diets; but nearly all the Fijians consume a really adequate animal protein serving at least once

[1] The test used was a modification of the standard titration with 0·01 of 2:6 dichlorophenolindophenol solution as described by Harrison (1947).

every few days, and the method of cooking makes it more likely that some vitamin *C* will be present at the time when the food is being eaten. The Fijian tends to eat more bananas and papaw, and both races eat raw mango, pineapple, guava in season, and citrus fruits. Both races appear to use relatively large quantities of salt, either in the preparation of the food or with the food as it is being eaten. Fijian food is often cooked in salt water. It is very rare indeed to find cases of starvation in either race. The caloric content is generally adequate, but the balance of the diet is often pathetically inadequate. The diet fibre content has been reported as very low in the Indian group as compared with that of Pacific Islanders (New Guinea natives).

TABLE I.

Time of Excretion of Ascorbic Acid (500 Milligrammes Given per Day).[1]

Excretion of Ascorbic Acid.	Patients Tested.	
	Fijians.	Indians.
Number of days before ascorbic acid excreted in urine:		
0	65	36
1	24	52
2	4	18
3	3	30
4	—	17
5	—	11
6	— (97)	7 (174)
7	—	2
8	1	—
9	—	3
10	—	2
11	—	1
Ascorbic acid not excreted before fourth day	1 (1%)	43 (25%)

[1] A hæmoglobin value of less than 9·0 grammes per 100 cubic centimetres was not detected in any Fijian patient, but was detected in 64 (37%) of Indian patients.

Opportunity was taken to visit an area about 15 miles from Suva where many of our worst cases of anæmia are found and where there exist malnutrition and illness quite out of proportion to the size and numbers of the district. This is a flat, marshy, sour land area, fairly heavily cultivated with sugar cane, often up to the doors of the houses. Intelligent school-teachers in the area have told me that they have had very small success in trying to grow any greens even during the cooler months in the middle part of the year. Occasionally long beans can be grown; there are a few cows and a few fowls. Occasional papaw trees can be seen. Here the population is almost all Indian, and the diet is mostly confined to rice, sharps and dahl. It is a fairly poor community, but there are those among the inhabitants who could easily afford a good balanced diet, yet live in precisely the same manner as their neighbours. The question was considered whether there was perhaps some soil deficiency in this area, including possibly a cobalt deficiency. To date the soil here has not been analysed, but soil analysis experts thought such deficiency most unlikely in view of the fact that it had been washed down from the neighbouring hills. When the inhabitants were questioned with a view to ascertaining their diet source of vitamin *C*, many of them admitted that they did consume raw mango, guava and pineapple in season. Mangoes begin to appear in October and reach a peak in November and December. Pineapple is found for a few months from November, and guava between January and April.

The explanation of the fact that vitamin *C* deficiency is so rarely found among the Fijians is probably that their boiled leaves form a constant if sometimes small supply, and that this is augmented by citrus fruit—bush lemons are to be found all the year round, but the main citrus season is between March and June, a time when the other fruit tends to be in short supply.

TYPES OF ANÆMIA.

Most of the severe anæmias fell in one or other of the following two groups.

1. Microcytic iron deficiency type. The mean corpuscular volume was between 70 and 90 cubic μ, and the mean corpuscular hæmoglobin concentration between 20% and 26%. This type responded to adequate oral iron therapy, or when this was not tolerated to intravenous iron therapy. However, some of these patients proved strangely resistant to treatment, and some, in spite of the presence of normoblasts in the marrow smear, appear to respond fully only to folic acid treatment in addition to iron therapy. In other words, when they were fully saturated with iron a second reticulocyte wave could be produced after treatment with folic acid.

2. Macrocytic type, generally hyperchromic. The mean corpuscular volume was between 90 and 130 cubic μ, and the mean corpuscular hæmoglobin concentration over 30%. In this type examination of a smear of the marrow generally revealed megaloblasts, and even when typical megaloblasts could not be found the marrow nearly always gave a good reticulocyte response within four to five days of intramuscular injection of folic acid. Response to vitamin B_{12} or liver injections was variable. In general the "seasonal" anæmias were more of this type, as were also the anæmias of rapid onset and those which were very severe anæmias.

Less commonly there were mixed types in which the cells often tended to be small but well hæmoglobinized. Of course, in the process of active regeneration of blood with high reticulocyte counts the hæmoglobin concentration level frequently fell, as the iron reserves were rapidly depleted.

Clinical Examination of Patients.

Fijian Group.

Apart from scabies in a few patients in the Fijian group, and very occasional active yaws infection, there was little definite abnormality to be detected.

TABLE II.

Analysis of Indian Group.

Time of First Ascorbic Acid Excretion.	Number of Cases.	Patients with Hæmoglobin Value Less than 9·0 Grammes per 100 Cubic Centimetres.	Patients with Hæmoglobin Value Less than 5·0 Grammes per 100 Cubic Centimetres.
Before fourth day ..	131	32	3
After fourth day ..	43	32	8

Indian Group.

The patients in the Indian group married younger and tended to be of greater parity than those in the Fijian group. It was unusual to find any definite evidence of vitamin deficiency, although painful tongue and mouth, paræsthesiæ, muscular pains, and general weakness and anorexia were very frequent symptoms. Atrophic glossitis was not infrequently seen, and often examination of the tongue revealed the mixed picture of patches of atrophy and patches of hypertrophic papillæ, especially round the tongue margin, occasionally with small areas of frank ulceration on the tongue or mouth mucosa, and often with central cracks. The skin was frequently of "pavement" type on the lower parts of the legs, and often very dry. Hyperpigmentation of the skin on the back of the hands and feet was occasionally encountered, and very occasionally a typical pellagra picture presented. On rare occasions examination of the finger nails revealed koilonychia. Definite peripheral neuritis was a rarity, although extreme tenderness on pressure of the calf muscles was not uncommon. Clinical scurvy was not seen, although dental caries and gingivitis were very common.

Particularly in patients with the severe megaloblastic types of anæmia it was not uncommon to find a palpable liver and spleen, and in association with this there was sometimes evidence of increased hæmolysis with a raised serum bilirubin level and an indirect positive response to the Van den Bergh test.

The association of positive results to stool tests for hookworm or ascaris with the severe anæmias was quite inconstant; in many of the most severe cases no infection was present, and conversely in cases of severe infection normal hæmoglobin levels might be found.

In a series of cases previously reported by P. Manson-Bahr (1951) at this hospital, only one case of acid-fast achlorhydria was discovered. Dr. Manson-Bahr also demonstrated the seasonal nature of anæmia among Indians in this colony.

The serum protein levels were in most cases within normal limits. (Compare also the report of M. Bell and L. Wills, 1950.)

Discussion.

It would appear to be generally recognized that ascorbic acid plays a most important part in the effective utilization both of iron and of folic acid by the body. With regard to iron, conversion to ferrous iron is apparently facilitated in a reducing medium. In recent experimental work concerning the absorption of iron in radioactive form, it was found that the addition of one gramme of ascorbic acid to the food source of iron (in this case specially prepared bread) resulted in six healthy subjects in a doubled or trebled absorption of iron.

In the case of folic acid metabolism the ascorbic acid is said to aid absorption from the bowel, and it appears to be necessary for the essential change from folic to folinic acid.

It is further thought that bone marrow itself functions better in a reducing environment.

There appears to be good evidence that deficiency of vitamin *C* in infants can precipitate a megaloblastic anæmia, in certain cases of which at least normal hæmatopoiesis can be regained after treatment with ascorbic acid. This has been borne out also in animal experiments.

Scurvy is known to be associated with anæmia, and Bronte-Stewart (1953) has reported from Africa (Cape Town) a series of cases of severe scurvy in which the diet had contained almost no ascorbic acid; and 10 out of 13 of the patients, after an adequate control period of observation, then had a rapid complete blood response following treatment with one gramme of ascorbic acid per day given intravenously.

However, it is also reported that in a normal man on a diet free from vitamin *C*, but otherwise adequate, scurvy developed, but no anæmia in spite of vitamin B_1 loss from venesection to 6000 cubic centimetres (Crandon *et alii*, 1940).

The hypothesis now put forward is this: The diet of very many Indian patients is either borderline or quite inadequate in both iron and hæmatopoietic factors, including folic acid, all the year round. This becomes far more serious when extra strain is placed on these resources during pregnancy and lactation. This seasonal deficiency of ascorbic acid can then tip the scales against normal blood formation and produce the state of affairs which has already been demonstrated by the statistics presented earlier in the paper.

Two obvious weaknesses in the case suggested from this hypothesis are as follows:

1. No clinical scurvy has been seen in the cases under review. However, when one appreciates that human volunteers have had to remain for months on a diet containing almost no ascorbic acid before there were minimal skin changes, and how even these were reversed with a very small intake of ascorbic acid, it becomes apparent that the clinical signs of scurvy are very late in onset. In the cases under review, unlike those quoted by Bronte-Stewart relating to the African diet from which there was an almost permanent absence of ascorbic acid, there are periods during the year when the tissues are adequately supplied with this vitamin. All that is being suggested in this hypothesis is that, when food intake levels of iron and folic acid are always minimal, an ascorbic acid deficiency extending even over some weeks, or perhaps a few months, may be the determining factor in the onset of anæmia.

2. No case has been presented as showing reversion from megaloblastic to normoblastic marrow, and recovery of the normal blood picture, by treatment with ascorbic acid alone. There are several things which made this impossible of proof in this review. Perhaps the most important is that so many of the cases were really urgent ones, in which the giving of folic acid would produce a certain and rapid response, so that to withhold it was considered unwarranted. Cases of severe megaloblastic anæmia prove themselves to be real medical emergencies. If the patients came into labour within a few days of their admission to hospital there was a considerable risk of collapse and they tolerated blood transfusion very badly, no matter how carefully the blood was typed, or how slowly the transfusion was given, or whether the transfusion was given as packed cells.

In addition to this, spontaneous remissions were not uncommon, nor were remissions with rest and ward diet, so that a large series of cases would have to be investigated to have any statistical significance. The best response of patients given only ascorbic acid in treatment was response of 8% reticulocytes from a hæmoglobin value of eight grammes *per centum* in six days. The marrow was normoblastic.

Some Observations on Severe Pregnancy Anæmia.

Rapidity of Onset.

There have been many opportunities to check the truth of the rapidity of onset in respect to some of the cases. Some patients had been observed at regular intervals during the ante-natal period and had then shown a large drop in hæmoglobin level over a fortnight, with no evidence from the history, from clinical examination or from the reticulocyte count of any internal or external hæmorrhage. Others showed this drop in hæmoglobin level even while they were in hospital. These anæmias generally proved to be megaloblastic in type. What had become of the blood was frequently puzzling, as there was no evidence of hæmolysis to be found either. It was not possible to perform stool tests for stercobilin. Doubtless the excessive fragility of these cells resulting from megaloblastic hæmatopoiesis must be a large factor in such occurrences, but one has the impression that the whole blood-forming system can in certain cases of chronic malnutrition and excessive strain become very ill very quickly and, as has been pointed out, such cases are in every sense medical emergencies.

Rapidity of Improvement.

A striking fact in many cases has been the dramatic improvement in the general condition of the patients following administration of folic acid, this improvement occurring within days, and sometimes even within hours. Certainly they are admitted to hospital and at complete rest; but most of them were so ill before their admission as to have been incapable of anything but rest. This improvement has occurred before there could possibly have been any improvement in hæmoglobin level and has been most noticeable on the mental side. Sometimes definite psychotic behaviour has returned to normal, and often general apathy and anorexia have been arrested. This fact has suggested that possibly there may be a specific nervous deficiency factor which was made good at once by the folic acid, the result being improved mental function quite independent of any rise in hæmoglobin level. When the hæmoglobin levels are extremely low, this of course cannot be expected to apply, and in fact does not. For instance, at the present time there is in hospital a puerperal Indian woman who on her admission had a hæmoglobin value of 2·5 grammes *per centum*. It was five days after her admission to hospital and treatment with folic acid before her behaviour returned to normal.

Association of Fever.

Most patients with really severe megaloblastic anæmia are found to be febrile, and in many of these no other cause for the fever can be found. Some of these have a leucocytosis, but many have the leucopenia of an unhealthy bone marrow. All such patients become afebrile when the anæmia is corrected.

Resistant Anæmia.

Since parenteral treatment eliminates any absorption difficulties, resistant cases are rare, but one does occasionally encounter a case in which, during pregnancy, the anæmia is most resistant but responds well after delivery. Another puzzling type of case is that in which the patient shows good reticulocyte responses without a corresponding rise in hæmoglobin levels, and yet has no evidence of hæmolysis or excessive blood loss from the body.

Further Lines of Investigation.

It has been pointed out that the Indian dietary intake of blood-forming factors appears to be inadequate, at least for the extra strain of pregnancy and lactation. (Severe anæmias, microcytic and macrocytic, are seen in Indian men and children, but far less commonly.)

One wonders whether there are also difficulties of absorption peculiar to the Indian race and perhaps resulting from their dietary habits. May it be that colitis is associated with the bowel irritation of hot curries? (Certainly the ingestion of such curries by the unaccustomed is followed by excessive bowel peristalsis.) Do any of these condiments have a neutralizing or inhibiting or fixing action on any of the hæmatopoietic factors? Do they predispose to the multiplication of any special bowel flora which might compete favourably for, say, vitamin B_{12} or folic acid?

Such questions open new avenues of investigation which may throw more light on the anæmias of patients taking Indian diets. (Recently in the hospital a case of a megaloblastic anæmia was found in a Fijian woman who was living with Indian people on the Indian diet.)

Summary.

Two comparable groups of Fijian and Indian women living in the same physical environment, but with very different dietary habits, are reviewed with regard to pregnancy anæmia.

Evidence is presented which suggests that in patients taking diets inadequate in iron and hæmatopoietic factors generally a seasonal deficiency of ascorbic acid may precipitate the occurrence of a severe and also seasonal anæmia.

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ACUTE INFECTIONS OF THE EARS IN CHILDREN.[1]

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At the outset I should like to make it clear that this paper is based on the works of T. G. Wilson, of Dublin.

Otitis Externa.

Furunculosis, external otitis, dermatitis and seborrhœic eczema may all occur in children, but less commonly than in adults. External otitis with otorrhœa is very often secondary to *otitis media*.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on July 26, 1956.

Acute Infection of the Middle Ear.

I shall discuss acute infections of the middle ear with regard to those occurring in infancy and those making themselves manifest in later childhood.

In infancy the conditions occurring are acute suppurative *otitis media* and acute *otitis media* in association with acute gastro-enteritis. Acute suppurative *otitis media* in infants differs in many ways from the corresponding disease in older children and adults. It can be annoyingly persistent, and at times may become dangerous with dramatic rapidity.

The wide open and horizontal nature of the Eustachian tube in infants provides an explanation for the supposedly greater incidence of acute *otitis media* in bottle-fed babies. When the infant is fed at the breast he is normally held in a more or less upright position; but when a baby is bottle fed he may be allowed to lie on his back, so that milk is allowed to find its way into the naso-pharynx and so to the tympanum via the Eustachian tube.

Teething is often supposed to be a cause of *otitis media* in infancy. It is said that some children develop otitis with the eruption of each tooth, and its occurrence is explained on the grounds that the pain of teething lowers the general resistance and renders the child more likely to succumb to infection. There are some who consider that the connexion between teething and *otitis media* is merely a superstition, and that while reflex otalgia may well occur under these circumstances, *otitis media* never does except incidentally. Reflex otalgia is a very real thing, and it may have occurred to some that it is not impossible to have a reflex engorgement of the mucosa of the Eustachian tube and middle ear, leading to stasis of fluids and consequent infection of the middle ear. The occurrence of *otitis media* during teething in infants seems too common to be coincidental.

Bacteriological Considerations.

The organism found in infantile *otitis media* is preponderantly the *Staphylococcus aureus*. The hæmolytic streptococcus does not appear so frequently as in later life. *Pseudomonas pyocyanea* gives rise to a troublesome form of otitis, but the degree of systemic disturbance is slight. *Bacterium coli* is found principally in cases associated with gastro-enteritis.

Signs.

The signs at first are those of a systemic disturbance of greater or less severity, sometimes accompanied by head-rolling. Older children may put their hands to their ears, but neither of these signs is to be relied upon. Two degrees of severity are noticed in *otitis media* of infants. (i) In mild cases the child recovers from this constitutional upset after some hours. A discharge may be noticed in the meatus, although a number of children probably recover without otorrhœa, the discharge being evacuated through the wide Eustachian tube. In such cases the diagnosis may be missed. (ii) In others the general illness continues, the infant goes off his food and may vomit, continues to be restless, and is obviously in severe pain. The temperature may rise as high as 105° F., but the rise may be intermittent. There is often no indication that this febrile illness is caused by trouble in the ear or even in the head. It clearly follows that in the presence of unexplained pyrexia every infant should have his ears examined. Both ears should be examined. Radiological examination of the mastoid process will often show clouding of the air cells in uncomplicated *otitis media*. Radiography is therefore of little value except in late cases in which actual destruction of bone is present.

Course.

In acute *otitis media* the drumhead first becomes dull and thickened. The cone of light disappears, and details are gradually lost, so that it is no longer possible to identify the short process and handle of the malleus. As the disease progresses the drum becomes dull red, first in the region of Shrapnell's membrane, later in the postero-superior quadrant, which may bulge noticeably. Finally,

the whole tympanic membrane may be deeply red and bulging.

Spontaneous perforation does not readily take place, probably because the shape of the Eustachian tube favours evacuation of pus into the naso-pharynx. When spontaneous perforation does occur, the discharge varies with the stage of the disease and the nature of the infection. It is at first serous and blood-stained, but later becomes purulent.

Treatment.

Myringotomy plays an important part in the acute *otitis media* of infancy, whether simple or accompanied by parenteral infection. When the disease is detected, myringotomy should be performed in the presence of minimal changes in the tympanic membrane; this is the firm opinion of T. G. Wilson. This usually means that the light reflex is lost and the anatomical details of the drum cannot be identified, while the membrane itself is dull, grey and lustreless, although not necessarily reddened.

After myringotomy the discharge may begin immediately, or it may not be seen for a day or so. When it does appear, cultures should be attempted to determine the nature of the organism and to test its sensitivity to the various antibiotics and chemotherapeutic drugs. It is important that this should be done at an early stage, for while in many cases the condition will undoubtedly clear up without chemotherapy, in a number it will not. In a surprising number of cases the organism proves to be penicillin-resistant, so that while it may be justifiable to give penicillin blindly in the case of older children and adults, it may be wrong to do so when dealing with infants. In many cases, when the condition completely fails to respond to penicillin it will clear up readily with "Aureomycin" or some other antibiotics.

It is most important that the meatus should be properly cleansed with full aseptic precautions at least twice daily. Antiseptic drops and powders are of little value. Sulphacetamide solution may be used. Penicillin and sulphonamide powders may cause skin sensitivity to develop. Highly coloured drops, such as methyl violet, mercurochrome and "Argyrol", effectively disguise the appearance of the tympanic membrane and the quality of the discharge.

Complications.

Acute Mastoiditis.

As the mastoid process does not exist in the first few months of life, the condition is truly one of mastoid antritis.

There are certain differences between the symptoms of mastoiditis in infancy and in adult life. Fever is of little assistance in diagnosis, and of less importance than in the adult. Symptoms suggestive of cerebral irritation or infection are also of less importance than in the adult, as the cerebral centres are most easily excited by peripheral irritation. They must, however, be regarded with a wary eye, as the open sutures and other anatomical features of childhood facilitate the intracranial extension of infection. Convulsions, hyperpyrexia, sudden chills and vomiting are usually also of less significance than in the adult. Retroauricular swelling, starting as a puffy œdema with obliteration of the retroauricular groove, and in late cases with a fluctuant swelling, usually makes the diagnosis of mastoiditis simple. When the condition is allowed to develop, a periosteal abscess with perforation of the mastoid cortex is often found.

There is a silent mastoiditis described, which is due to the type III pneumococcus. It is an insidious and progressive disease, unaccompanied by fever, and painless, with considerable progressive destruction of the bone of the mastoid area.

Intracranial Complications.

Of the intracranial complications, meningitis is by far the most common, and occurs relatively more often in children than in adults. Extradural abscess, brain abscess (which may result from a blood-borne infection), and sinus thrombosis also occur, but less often in infants than in older children and adults. Lateral sinus thrombosis is in fact extremely rare in infants. According to Karelitz (1952), in 100 proved cases none of the patients was aged under nine months and only sixteen were aged under five years.

Otitic hydrocephalus is a rare complication in infants, but may occur in children and adolescents.

Acute Otitis Media of Infancy Associated with Acute Gastro-Enteritis.

Hall (1948) states that the acute non-specific gastro-enteritis of infants is a disease limited to the first year of life. Gastro-enteritis occurring in later childhood does not possess the same characteristics as the disease when it occurs during the first year. The dominant feature is severe dehydration, which does not appear to the same extent in later years. Marriott has been quoted as stating that many of the disturbances of infants which have previously been ascribed to dietary faults are in reality the results of infection, and that the most frequent infections that interfere with nutrition are *otitis media* and pyelitis.

It was formerly held that in cases of acute gastro-enteritis associated with acute *otitis media* the primary condition was acute mastoiditis with a secondary irritative or infective gastro-enteritis. It has been suggested that acute *otitis media* acts as a "trigger mechanism" in setting off the diarrhœa and vomiting. The response, once started, can then be elicited by any subsequent stimulus, including acute infection of the middle ear. Ebbs (1937) found that 61% of 603 infants who came to autopsy, having died from acute gastro-enteritis, were found to have an acute infection of the middle ear cleft. Hall in 1948 showed that in those cases associated with definite mastoiditis the improvement after operation was immediate and often dramatic.

On the other hand, the theory that gastro-enteritis is really the primary condition and that *otitis media* is secondary is thought to be upheld by the following considerations:

1. Gastro-enteritis is a debilitating disease. If the infant should vomit when lying on his back, some of the infectious vomited material may pass down the wide Eustachian tube into the middle ear and mastoid antrum.

2. Gastro-enteritis is most common in the summer and acute *otitis media* in the winter.

3. Bacteriological investigations, so McGibbon (1948) claims, seem to show that gastro-enteritis is the primary condition, the *Bact. coli* being the most frequently found infecting organism in *otitis media*.

The mortality rate in these cases is very high, varying from 10% to 40%, and a high proportion of patients develop acute *otitis media*, often with mastoiditis.

These cases of gastro-enteritis with *otitis media* may be divided into two forms—manifest *otitis media*, in which inflammatory changes are found in the tympanic membrane on otoscopy, and latent *otitis media*, in which the drum appears normal, but in which mastoid infection is found either at operation or *post mortem*. In this case the infection becomes locked off in the mastoid antrum by œdematous closure of the aditus.

The signs of manifest parenteral acute *otitis media* differ only in degree of severity from those of acute *otitis media simplex*. They include pyrexia, fits of screaming, restlessness and convulsions. Enlargement of the posterior cervical chain of glands is occasionally present, but cannot be regarded as a reliable or specific sign. It has been suggested that all children with gastro-enteritis should have their ears examined at least once daily, and more frequently should they show a sudden exacerbation of symptoms. The rapidity with which acute *otitis media* can develop in these cases is extraordinary; the condition of the drum may deteriorate from normal to spontaneous rupture in a few hours.

The intriguing thing about the relationship of *otitis media* and gastro-enteritis in infants is that some twenty-

odd writers from overseas have discussed this subject. Hartman in 1894 first drew attention to the presence of middle ear infection in nutritional disorders of infants, and to the relief of the latter conditions which occurred when the middle ear or mastoid was treated. Goeppert found infected middle ears present in 12% of his series of infants with gastro-intestinal disorders. Kistler frequently found pus in the mastoids at autopsy on infants who had died of gastro-enteritis. Renaud, in 1921, instanced 70 consecutive deaths in which suppuration in the mastoids and labyrinth was discovered *post mortem*. In 30 cases aural infection had been diagnosed before death, and in 40 it had been overlooked. Stable and Philpott, of Brisbane, in a description of their series of gastro-enteritis cases of 1946-1947, held that 40% of infants coming to autopsy had various degrees of infections of the mastoid air cells, and that 25% had "frank pus" in their mastoid cavities. Now the intriguing thing to me is that here in Sydney, in a 1956 review of 235 patients with gastro-enteritis, 75% of whom were aged under two years, 26 autopsies were recorded, and no mention was made of the presence or absence of *otitis media* or mastoiditis.

Again I point out the claim of Hall and others—that in cases of gastro-enteritis associated with definite *otitis media* and mastoiditis the improvement after operation was immediate and often dramatic.

Treatment.

Early myringotomy is advocated. Both ears are opened in cases due to parenteral infection.

Should the gravity of the child's condition persist in spite of repeated "positive" myringotomies, mastoidectomy must be considered. A firm diagnosis of mastoiditis is most difficult to make, for these patients do not usually develop obvious signs such as retroauricular œdema. Hall's (1948) indications are as follows: (i) persistent pyrexia; (ii) persistent or increasing diarrhœa; (iii) sudden or recurrent dehydration; (iv) persistent failure to improve without dramatic collapses (these indications are all qualified by being associated with recent positive myringotomy findings); (v) persistent or profuse otorrhœa associated with any of the foregoing indications; (vi) refractory cases when no cause can be found; in these the mastoids should be explored, lest the condition be of the rare silent type.

It is held that penicillin and other antibiotics and the sulphonamides give disappointing results, but should be employed.

Acute Infections of the Ear in Later Childhood.

Eustachian Obstruction in Childhood.

Eustachian obstruction can be produced by inflammatory swelling of the naso-pharynx or by hypertrophy of the naso-pharyngeal lymphoid tissue, or by a combination of these causes. In these cases the normal opening of the Eustachian tube in the act of swallowing is prevented. The air in the middle ear cleft is then no longer in communication with the atmospheric air, and in consequence the oxygen in the middle ear is absorbed and a negative pressure develops in the middle ear. This negative pressure displaces the membrane medially, producing deafness by causing a "differential loading" of the membrane and by interfering with its movements.

The principal symptom is deafness, occasionally with pain in the ear.

On examination the child will be found to suffer from conduction deafness, and associated nose and throat disease may be present.

Treatment.

Some authorities claim that they can relieve the deafness by politzeration and by Eustachian catheterization. Infected tonsils and adenoids should be removed.

In cases of naso-pharyngeal lymphoid hypertrophy in which the tonsils have already been adequately removed, radiotherapy may be necessary. Radiotherapy causes an infiltration of the lymphoid tissues by small round cells, which subsequently organize and contract, leaving a normal mucous membrane; the results of treatment are satisfactory and no important side effects need be feared.

Catarrhal Otitis Media.

Catarrhal *otitis media* is a subacute, painless condition characterized by the presence of sterile fluid in the middle ear, which causes deafness. It may be secondary to upper respiratory infection, an allergic basis has been found in some cases, while in others it occurs as the aftermath of acute *otitis media*.

A most important group of cases are those in which the serous exudate occurring at the onset of acute suppurative *otitis media* is rendered sterile by the administration of antibiotics. It has been suggested that this phenomenon results from the fact that surgical drainage was not carried out when necessary. The fluid in the middle ear is clear and straw-coloured.

The drum may appear to be normal, but the landmarks somewhat blurred, and a fluid level may show. The deafness is usually of the conduction type.

Treatment.

It is thought that if the fluid is not removed it may organize and cause progressive middle ear deafness. In young children removal of tonsils and adenoids is held to effect a cure. In cases in which there is recurrence of this naso-pharyngeal adenoid tissue after an adequate removal, radiotherapy is helpful. In other cases myringotomy followed by inflation of the Eustachian tube may be necessary in order to evacuate the fluid.

Acute Suppurative Otitis Media.

Acute suppurative *otitis media* is very common during the first two years of life. In older children its incidence is still greater than in the adult. The presence of excessive and infected lymphoid tissue in the nose and throat is a predisposing cause.

Symptoms.

The pain may be excruciating, but alternatively in some cases it may apparently be slight. The temperature is usually higher than in the case of the adult; it is important to examine the drum head in children with unexplained pyrexia. Convulsions and "meningism" may occur early, and are not necessarily of grave import. The drum becomes red and inflamed at an early stage, but it may be grey and lustreless rather than red.

Treatment.

Treatment follows the usual lines, with chemotherapeutics and antibiotics and myringotomy if necessary. Predisposing causes in the nose and throat should later be eliminated.

Complications.

The majority of the complications of acute aural disease in children after the age of infancy do not differ materially from those of adults.

Acute mastoiditis is not nearly so frequent now as it was. Labyrinthitis, meningitis, extradural or brain abscess, perisinus abscess and lateral sinus thrombosis are experienced.

Otitic hydrocephalus has been described by Symonds (1931), and Van der Borch, of Adelaide discussed it recently. Typically, a patient with *otitis media* is progressing satisfactorily when symptoms of generalized increased intracranial pressure suddenly develop. Headaches, drowsiness, papilloedema and vomiting are seen, and may lead to a tentative diagnosis of brain abscess. However, on lumbar puncture a large quantity of normal cerebro-spinal fluid under considerable pressure is withdrawn, and the patient's condition rapidly reverts to normal. This cycle of events may be repeated once, twice or more for a period of some months. The patient usually remains well between attacks. Eventually recovery is usually complete.

AFFECTIONS OF THE EAR IN ACUTE INFECTIOUS DISEASE.

Scarlatina and Measles.

It is seldom that the acute fulminating complications of measles and scarlatina, which were formerly only too common, are now seen. This is particularly the case in streptococcal diseases such as scarlatina, and the change cannot be entirely ascribed to the use of antibiotics.

Mild attacks of *otitis media* are still frequently seen in scarlatina and measles, particularly in the latter, and they do not differ from the usual variety.

Mumps.

In mumps the complication to be feared is neuro-labyrinthitis. Wright (1938) believes that the virus of mumps causes an effusion into the labyrinth.

Holden and co-workers (1946) and Stevens (1946) believe that it produces meningoencephalitis with lymphocytic pleocytosis and increased protein in the cerebrospinal fluid. The inflammation may be confined to the vestibular or to the cochlear part of the labyrinth, but in some cases it affects both. Fortunately, the condition is usually unilateral. The tympanic membrane is usually normal in appearance; the labyrinthine manifestations correspond to those of serous labyrinthitis. The symptoms arise about the fifth day of the disease. Treatment is purely symptomatic. The deafness is incurable.

Influenza.

The frequency and intensity of ear affections in influenza vary considerably; in some epidemics virulent aural infections are common. The characteristic findings are a hæmorrhagic form of *otitis media* with very acute symptoms, which may rapidly spread to the mastoid. In some cases the cochlea is involved without apparent infection of the middle ear. The otoscopic examination in the early stages reveals blood vesicles or bullæ in the external auditory meatus and on the drum. As the disease progresses the bullæ rupture, the tympanic membrane perforates, and the discharge changes from sanguineous to purulent.

Meningococcal Meningitis.

Meningococcal meningitis carries danger of labyrinthine involvement, the purulent meningeal exudate gaining access through the internal auditory meatus. As a result the entire neuro-epithelium may be destroyed in a few hours. The labyrinth may later be filled with connective tissue, which later ossifies so that the labyrinthine spaces are obliterated. Both labyrinths are usually involved, and the disease was a frequent cause of deaf-mutism before the advent of antibiotics.

The onset of characterized by sudden deafness. Vertigo and nystagmus will be more obvious if there is an appreciable interval between the involvement of the labyrinths. The otoscopic findings are usually limited to slight infection of the tympanic membrane.

ACUTE UPPER RESPIRATORY TRACT INFECTIONS IN CHILDHOOD.[1]

By S. E. J. ROBERTSON,
Sydney.

AN acute upper respiratory tract infection may be defined as an illness of sudden onset characterized by fever, malaise, gastro-intestinal symptoms such as anorexia and vomiting, exudation of mucus into the nasal passages and diffuse inflammation of the nose and throat. Cough is usually present, but for the purpose of this discussion no definite evidence of inflammation in the lungs is found, nor laryngitis, nor purulent complications such as purulent *otitis media* or gross enlargement of the cervical lymphatic glands.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on July 26, 1956.

Incidence.

These infections are exceedingly common in children. According to Epstein (1954) in New York City two out of three children experience one to five mild upper respiratory infections per year, and one out of four experiences one to five severe infections of this type per year. Dingle (1949), studying families in Cleveland, United States of America, found that the pre-school children of families with older children attending school were the greatest sufferers, having an attack rate of respiratory infections of 6·72 per year, and in school children the attack rate was 6·09 per year. When there were no school children in the family the attack rate in pre-school children was only 4·86 cases per year. Figures in a comparable study from Newcastle upon Tyne (Spence, Walton, Miller and Court, 1954) show similar results. No such studies have been made in families in this country; but even when allowance is made for more favourable climatic conditions, it is safe to assume that these infections are exceedingly common and that they account for a large proportion of the illnesses of family practice.

Ætiology.

Most studies fail to implicate a causal virus or bacteria in the vast majority of cases. The virus of the common cold is certainly a common invader, as is the influenza virus during epidemic periods. The Coxsackie group of viruses is probably present in many cases. Recently the adeno-pharyngeal-conjunctival (A.P.C.) virus has been found to cause many of these upsets (Leading Article, 1955).

The number of occasions on which a hæmolytic streptococcus is isolated from the throat in such infections varies from 2% to 20% in various studies. Such organisms as the pneumococcus, the staphylococcus or *Hæmophilus influenzæ* may be grown from a throat swab; but it is often difficult to know whether these organisms were the primary cause of the infection, were secondary invaders, or were accidentally present in the throat during the infection.

Clinical Features.

When the patient is first examined it is extremely difficult to decide what is the cause of the infection and whether the illness is going to be of short or long duration. However, there is often a similarity in the clinical pictures produced with different infecting agents. There is usually a prodromal period of twelve to twenty-four hours, during which the child exhibits anorexia, irritability and lassitude. There may be conjunctival irritation of a slight degree, watery nasal discharge, pallor and "dark circles" under the eyes. Fever develops, which may, in younger children, be exceedingly high. Vomiting and abdominal pain are common at the onset and a convulsive seizure may occur in susceptible children. Children under the age of six or seven years rarely complain of a sore throat; but this can be inferred from the refusal of solid foods and by the appearance of the throat on examination. A frequent irritating cough is usually present.

The child is usually difficult to examine owing to irritability, and is flushed and drowsy. The breathing is noisy owing to nasal congestion; but rapid respirations, especially with movements of the *alæ nasæ* and an expiratory grunt, indicate that pneumonia has supervened. Audible stridor indicates that inflammation has involved the larynx. The visible portion of the nasal mucous membrane is acutely inflamed and there is a mucoid nasal and post-nasal discharge. The tonsils are enlarged and inflamed and there is inflammation of the visible portion of the oro-pharynx. The tonsillar lymphatic glands are usually palpable and slightly tender and the tympanic membranes may be dull, with perhaps congestion of some of the blood vessels on their surfaces. The breath sounds on auscultation may be exceedingly harsh and the congestion of the nasal passages alters their quality, but no accompaniments can be heard.

The course of the illness, if no complications supervene, is usually short. As a rule fever subsides in two or three days. Activity is quickly resumed and the appetite recovers. However, nasal obstruction and discharge, enlargement of

the tonsils and the tonsillar glands, dullness of the tympanic membranes and cough may persist for some weeks, although the general health of the child is otherwise good.

The foregoing clinical picture will vary according to the infecting agent, the age of the patient and the previous condition of the respiratory tract. The virus of the common cold may cause a mild watery nasal discharge and a slight cough of a few days' duration, with no fever, anorexia or other signs of illness. On the other hand, in young infants the common cold may be rapidly complicated and a very severe illness may follow. The influenza virus similarly may produce an illness varying from mild to dangerous and prolonged. The Coxsackie virus, usually the A group, causes a fairly characteristic syndrome which has been called "acute herpangina" (Zahorsky, 1920). The patient, usually under the age of five years, suddenly develops fever, anorexia and sore throat, occasionally with vomiting and abdominal pain lasting for two or three days. On the soft palate, uvula, anterior fauces and tonsils appear a few small greyish vesicles surrounded by an inflammatory areola which break down, leaving greyish-yellow ulcers which last about a week. This disease tends to appear in epidemics. The common cold and influenza can be diagnosed only when contacts are known to have recently suffered from typical attacks of these infections. The A.P.C. group of viruses has recently received much attention. They are apparently a common cause of undifferentiated upper respiratory inflammation of acute onset and short course.

The most difficult problem is to decide which of these inflammations are due to the hæmolytic streptococcus. When facilities are available, cultural examination of a throat swab is obligatory. Epidemiological data of great value could be obtained if it was customary to swab the throats of these patients prior to the institution of treatment. Such swabs could then be conveyed as soon as possible to a laboratory for culture. In such infections due to the hæmolytic streptococcus, the onset is usually abrupt and gastro-intestinal symptoms are common. The pharynx tends to be more inflamed and throat discomfort more acute than with other infecting agents. A white cell count normally reveals a mild polymorphonuclear leucocytosis which is unusual in other forms of infection.

Complications.

Complications are frequent and sometimes dangerous and represent the most important aspect of this syndrome. They are especially important in young infants and must be watched for most carefully in this age group. The commonest are undoubtedly acute purulent *otitis media* and cervical adenitis. Bronchopneumonia is of great importance owing to its severity in infancy. Staphylococcal pneumonia in infancy of a very severe type has undoubtedly become much more common over the last few years. Peritonsillar and retropharyngeal abscesses are apparently now very rare in childhood. Laryngitis with respiratory obstruction of varying degrees often complicates these infections and can be a worrying problem when the patient is being treated at home.

Differential Diagnosis.

I should like at this point to emphasize how closely acute upper respiratory infection can be counterfeited by the allergic child, especially in the first two years of life. When one is taking the past history of an asthmatic child it is common to find that acute febrile respiratory upsets of this nature have punctuated infancy. It is also common for infants with frequent upper respiratory upsets to develop frank asthma in later childhood. Points which indicate a possible allergic basis for the upset are a family or previous history of allergic disease and a tendency for these upsets to have been recurrent. Careful examination of the chest in such upsets often reveals signs of bronchospasm, with prolonged expiration and perhaps high-pitched wheezing. It should also be remembered that acute respiratory allergic upsets in young children tend to produce exudative phenomena in the lungs, with widespread crepitations and a clinical picture indistinguishable from that of acute infective bronchitis.

In acute anterior poliomyelitis there is often a complaint of sore throat and slight inflammation of the pharynx is found. Pertussis and measles start with symptoms and signs localized to the upper part of the respiratory tract. Diphtheria is far from a rare disease and the pharyngeal type in its early stages is clinically indistinguishable from less serious infections.

Treatment.

The treatment of acute upper respiratory tract infections in childhood, since the advent of the antibiotics, has become a welter of controversy. Before the use of chemotherapy is discussed the non-specific measures should be mentioned. Rest in bed in a warm room is necessary until the temperature has been normal for forty-eight hours. Aspirin in a dose of one grain per year of age up to a maximum of five grains three times a day makes the child more comfortable. Nose drops have been abused, but are often useful when nasal blockage makes the child distressed. A weak aqueous buffered solution of ephedrine or ephedrine-like substance can be instilled into the nose fifteen minutes before meals and at bed time for no longer than two days. The humidity of the child's room should be raised as high as possible. The patient's appetite is impaired and no attempt should be made to force food. Fluids should be offered but not forced. Attempts to maintain the child's usual intake during these upsets is a common cause of vomiting and subsequent feeding problems. Once the temperature has settled to normal for forty-eight hours the child is active and cheerful in bed and the appetite has returned, normal life can be resumed. I do not think that an enforced prolonged period in bed will hasten disappearance of the cough and nasal congestion which so often follow acute upper respiratory tract infections in childhood. I also know of no nasal drops or cough mixture which are in the least effective. The old-fashioned change of air is probably the best method of clearing up these after effects; but in these times this is difficult except for a few people. Tonics, vitamins, cod-liver oil and the like are also of no value. Adequate fresh air, rest and sensible foods, *plus* a little patience, are all that is necessary.

The difficult problem of whether chemotherapy should be used at the onset of acute upper respiratory infections must be considered. There is no doubt that the tremendous privilege of chemotherapy has been greatly abused in the treatment of infections of this type. It is also certain that the vast majority of these infections are viral in origin and therefore not susceptible to any present form of chemotherapy. The practitioner called to the bedside of such a child has many problems to consider. On the assumption that a careful examination has been made, there will be no doubt of the diagnosis and there should be no justification for instituting chemotherapy because of the possibility that a more serious condition, such as pneumonia, is present. The natural anxiety of the parents no doubt will be allayed if this fever is treated with one of the modern "wonder drugs", but this again cannot be considered a reason for instituting chemotherapy. On the other hand, the infection may be due to the hæmolytic streptococcus, in which case it is essential to eradicate the organism quickly and thoroughly in order to prevent the possible development of rheumatic fever or acute nephritis. It seems to me that the taking of a throat swab will solve this last problem. If this is reported on as yielding a growth of a hæmolytic streptococcus, chemotherapy should be instituted. If there is a previous or family history of rheumatic fever, such treatment should be started in any case.

Many people believe that antibiotic therapy will prevent the development of purulent complications of virus infections of the respiratory tract. Some doubt the truth of this belief and Hardy and Traisman (1956) found no difference in the complication rate with or without chemotherapy. It seems more efficacious to watch for such complications and to treat them as they arise than to try to prevent them.

The indications for antibiotic therapy would then be firstly a previous or family history of rheumatic fever, secondly the isolation of a hæmolytic streptococcus from

a throat swab, or thirdly the detection of some purulent complication such as *otitis media*, cervical adenitis or pneumonia. Exception to these rules could be made when the child is already known to be suffering from some disease which is likely to become exacerbated by infection. Such diseases would be bronchiectasis, the nephrotic syndrome, subacute glomerulonephritis and the cœliac syndrome.

When symptomatic therapy does not lead to improvement in forty-eight hours the diagnosis should be reconsidered. Such failure to improve is not of itself an indication for the institution of chemotherapy.

When the upper respiratory tract inflammation is judged to be allergic rather than infective in origin the same rules apply, except that antispasmodic and antihistamine therapy may be useful. A small dose of ephedrine, 15 milligrammes every twelve hours, with an equal dose of phenobarbitone, reduces the bronchial œdema, and a long-acting antihistamine reduces the nasal and bronchial secretion. Antibiotic therapy should be withheld unless an infective complication is recognized.

The type of chemotherapy to be used needs consideration. When an antibiotic is indicated, penicillin is the safest and is usually effective. If penicillin therapy is commenced an effective blood level should be maintained for at least five days and preferably a week. Frequent injections of penicillin for this length of time, even if the long-acting "Procaine Penicillin" is used, are not recommended for children with the mild infections. It is not uncommon for behaviour disturbances in children to follow repeated penicillin injections for recurrent upper respiratory tract infections. It must be remembered that if the child is suffering from unrecognized acute anterior poliomyelitis, paralysis is very likely to occur at the site of injections. An injection of benzathine penicillin in a dose of 600,000 units, combined with "Procaine Penicillin" and crystalline penicillin, each in a dose of 300,000 units, will provide a high initial level and maintain an adequate level in the blood for ten days. The recently described phenoxymethylpenicillin (Annotation, 1956) shows great promise of producing adequate levels when given by mouth. The dose is 125 milligrammes every three to six hours.

Sulphonamide therapy can also be recommended. Chapple *et alii* (1956) found that sulphonamide was equally as effective as penicillin in the treatment of these infections. Sulphadimidine, because of its greater solubility and lower toxicity, is a satisfactory choice. A suggested dose is 100 milligrammes per kilogram of body weight per twenty-four hours divided into four equal parts given every six hours.

The so-called broad spectrum antibiotics should never be used in these mild infections. If they are given for a period long enough to eradicate an organism they are extremely likely to cause a gastro-intestinal upset. Troublesome fungous infections of the mouth and perianal area are extremely common complications of such therapy. The main danger in their use is the emergence of strains of organisms resistant to their action. This is already occurring, and strains of the *Staphylococcus pyogenes* resistant to many antibiotics have now become a serious problem in pædiatrics.

Summary.

The acute upper respiratory tract infections of childhood have been briefly discussed. The known causes consist of virus infections, bacterial infections and allergy. The clinical features have been briefly described, a few points of difference between the different types mentioned and suggestions made as to investigation. Finally, treatment has been discussed and a plea made for a trial of symptomatic treatment only. Chemotherapy should be reserved for certain patients. The indications for chemotherapy have been suggested and the recommended antibiotic therapy is described.

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Reviews.

Treatment of the Child in Emotional Conflict. By Hyman S. Lippman, M.D.; 1956. New York, London, Toronto: McGraw-Hill Book Company, Incorporated. 8½" x 6", pp. 308. Price: $6.00.

IN this small, concise, but comprehensive book, the author presents conclusions he has drawn from his twenty-five years of experience as a psychiatrist in the Amherst H. Wilder Child Guidance Clinic, Minnesota.

The clinic team shares the treatment of the emotionally disturbed child. Psychiatrist, psychologist, case-worker and group therapist all help in the evaluation and treatment of the child and his environment. Although the therapy, with its accompanying love, support, understanding and occasionally environmental manipulation, is mainly concerned with forming a positive relationship with the patient, the book demonstrates clearly that the first step towards helping the "conflicted" child is a sound appreciation of psychoanalytical theory.

Besides being a pædiatrician, the author is a psychoanalyst, having trained with Anna Freud and August Aichhorn in Vienna, and therefore able to understand the subtle forces of the unconscious that are expressed in abnormal behaviour. He recognizes not only the superficial contributory causes such as economic frustrations, physical disease, death of one or both parents, *et cetera*, but also the various ways the child reacts to the parents' unconscious attitudes and needs. For example, he illustrates how a child's neurotic symptoms are an expression of his own unconscious conflicts, and how these are in turn satisfying a neurotic need in the mother. While the latter consciously complains of her child's behaviour, she is not only generating it but also deriving an unconscious satisfaction therefrom. This is why treatment of the child is usually supported by treatment of one or both parents, and why ideally the treatment requires that the patients gain insight into their unconscious motives and attitudes. In both treatment and prevention of childhood disorders a clinic is always handicapped by the limited number of adequately trained staff, and too heavy a case load. Therefore shorter and more superficial methods of therapy are necessarily used. This book is particularly interesting for the physician whose advice is most commonly sought by parents and children in emotional distress.

Histological Appearances of Tumours: With a Consideration of Their Histogenesis and Certain Aspects of Their Clinical Features and Behaviour. By R. Winston Evans, T.D., B.Sc. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.); 1956. Edinburgh and London: E. and S. Livingstone, Limited. 10" x 7½", pp. 789, with 989 illustrations. Price: 90s.

ALTHOUGH this book contains accounts of the histological features of all the common tumours, many rare neoplasms have been ignored. For example, of the hamartomatous tumours of the lung, only the chondroma and the common variety of bronchial "adenoma" are described and illustrated; the rare Schneiderian tumours of the naso-pharynx are not mentioned; adenomatoid tumour of the testis is mentioned but not described in any detail or illustrated; the osteolytic sarcoma which may complicate Paget's disease of bone is described, but the chondrosarcoma and sclerosing osteogenic sarcomata have been omitted.

There is an addition to the title which reads "with a consideration of their histogenesis and certain aspects of their clinical features and behaviour". However, the chapter on melanoma contains no information concerning the behaviour or prognosis in this condition. The author has omitted

gynæcological pathology and the pathology of intracranial tumours because he considers each of these a specialty in its own right.

There are some good features, though they are outweighed by the disadvantages. Most of the photomicrographs are sufficiently characteristic to be recognizable. The problem is to decide for whom this volume was designed. It is too specialized for students, but not sufficiently comprehensive for the histopathologist. The young histopathologist may find it useful. One can only assume that this book was written solely for the author's personal pleasure, so that he can savour again tumours that he has once enjoyed.

Virus Diseases and the Cardiovascular System: A Survey. By Ernest Lyon, M.D.; 1956. New York and London: Grune and Stratton. 8¼" x 5¼", pp. 222. Price: $5.75.

THIS book sets out what the author intended to accomplish in writing it, namely, to provide a reference book indicating the changes which take place in the cardio-vascular system when the body is invaded by virus or rickettsia. He has divided the book into three parts.

In the first part he discusses generally the method or concept whereby the vascular system is altered when the body is invaded by virus. His main contention is that clinical evidence and histological findings support the hypothesis that virus infections cause alteration in the integrity of the capillary network which produces transudation and as consequence, damage to adjacent pathological tissue with alteration in hæmodynamics. Protein leakages occur, the serum albumin decreases and the serum globulin rises. Throughout the book the author emphasizes what is called the capillary syndrome. There is a detailed chapter on the changes in the electrocardiogram, which, he states, are helpful in diagnosis of cardiac involvement in these diseases, and he notes the reversibility of the changes when the body processes return to normal. In the second part, he sets out detailed short notes with respect to each virus disease, emphasizing the effect on the capillaries, vessels and myocardium. In the final part he discusses the clinical features and pathology of the rickettsial diseases with special reference to the cardio-vascular system.

Thus we see that with excellent references he has covered the work by different workers in a very balanced way, and one can agree with Paul White in the foreword that the author has not emphasized his own observations to the disadvantage of other points of view. The book will be of interest to cardiologists and others as a work of reference.

Recent Advances in Pharmacology. By J. M. Robson, M.D., D.Sc., F.R.S.E., and C. A. Keele, M.D., F.R.C.P.; Second Edition; 1956. London: J. and A. Churchill, Limited. 8" x 5½", pp. 603, with 66 illustrations. Price: 40s.

REALLY this excellent book would have been better labelled "Volume 2" as it is quite a new book. It does not cover the same territory as the first edition and the two will find a place side by side on the shelf.

Professor Robson and Professor Keele have produced a most excellent book, the value of which is to be found in the clear and enjoyable presentation of the latest material on new drugs and pharmacological topics. So often such information is scattered through journals or presented by the drug manufacturer from a rather different viewpoint. This book, therefore, is not only for students and pharmacologists, but should be in the hands of every medical man, practitioner and specialist alike, who attempts to keep abreast of the avalanche of new treatments presented today.

The fourteen chapters deal with hypotensive drugs, chlorpromazine and antimotion sickness agents, phenylbutazone and the treatment of gout, nucleotoxic drugs, anticoagulants, radiation hazards, neuro-muscular blocking drugs, the newer antibiotics and many other topics of current interest.

Each chapter has a compendious reference list of selected papers on the subject under discussion which will prove of very great value, as several of these topics have not been reviewed elsewhere.

The great attraction of this book lies in the excellent presentation, which combines extensive details of the pharmacology and therapeutic applications of the new drugs with a clear and interesting account of their development and the basis of research upon which they depend.

"Recent Advances in Pharmacology" represents a high standard in book production and more than maintains the fine standard set by the earlier edition. Professor Robson and Professor Keele deserve unstinted praise for their efforts, and this book must surely become a pharmacological "best-seller".

Cardiology Notebook: For Preliminary Instruction in Medical Curricula. Edited by Alfred P. Fishman, M.D., Chairman, M. Irene Ferrer, M.D., Rejane M. Harvey, M.D., John H. Laragh, M.D., Dickinson W. Richards, M.D., and Josephine S. Wells, M.D.; College of Physicians and Surgeons, Columbia University; 1955. New York and London: Grune and Stratton, Incorporated. 10" x 8", pp. 98, with 18 illustrations. Price: $2.50.

THE aim of this one hundred page publication is, as stated in the foreword, "to help the medical student orientate himself towards one aspect of clinical medicine, at a time when he lacks an adequate grasp of any one single subject". With this object, the group of Columbia University cardiologists have gathered in readily accessible form a few basic examples of the methods and language of cardiology. It is their contention that the fundamentals of electrocardiography, cardiac fluoroscopy and hæmodynamics should be introduced to the student's mind at an early stage of his training. To those who have had difficulty in impressing basic and simple clinical truths on the minds of students, this would seem too ambitious a publication. Perhaps within our own medical community this work could be more fully appreciated by the recent graduate.

The subject matter is divided into four sections: (i) "Cardiac Fluoroscopy and X Ray", (ii) "Electrocardiography", (iii) "Hæmodynamics" and (iv) "Nomenclature of Cardiac Disease". The first three sections are well illustrated and show the usual high standard expected from this group of workers. However, the reproductions of the angiocardiograms are somewhat hazy and ill-defined (page 32), and one wonders why the electrocardiograms at times are understandardized. It is our impression that the information contained in this book could be more effectively sought by reference to standard and more comprehensive texts.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Women of Forty: The Menopausal Syndrome", by M. E. Landau; 1956. London: Faber and Faber, Limited. 7½" x 5", pp. 49. Price: 5s.

The book is addressed to laity; the author is a mother and a gynæcologist.

"Peaceful Uses of Atomic Energy: Proceedings of the International Conference", August 8-August 20, 1955. Volume 12, "Radioactive Isotopes and Ionizing Radiations in Agriculture, Physiology and Biochemistry"; 1956. New York: United Nations. 11" x 8½", pp. 565. Price: 63s. sterling.

The whole series comprises sixteen volumes, each averaging 550 pages; they will comprise all the papers read at the conference (about 1050 in number) with the discussions.

"Hutchison's Clinical Methods", by Donald Hunter, M.D., F.R.C.P., and R. R. Bomford, D.M., F.R.C.P. Thirteenth Edition; 1956. London: Cassell and Company, Limited. 7½" x 5", pp. 467, with many illustrations in colour. Price: 18s. 6d.

The first edition was published in 1897. Sir Robert Hutchison, who was one of the original authors, has now retired from active participation in the book; its title has therefore been altered to include his name.

"New Pathways in Cellular Pathology", by Gordon Roy Cameron, M.B., D.Sc. (Melb.), F.R.C.P., F.R.S.; 1956. London: Edward Arnold (Publishers), Limited. 8¼" x 5½", pp. 98. Price: 16s.

Based on two lectures delivered at Leeds and Dublin in 1954 and 1955.

"Essentials of Psychology", by Werner Wolff; second revised and enlarged edition of "What is Psychology"; 1956. New York, London: Grune and Stratton, Incorporated. 8¼" x 5½", pp. 400, with illustrations. Price: $6.50.

The author is Professor of Psychology at the Bard College, Annandale-on-Hudson, New York.

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

NEW DRUGS.

DURING the past ten years a flood of new drugs has appeared, and most of them have been useful in the treatment of disease. There has indeed been almost a therapeutic revolution, but at the same time much confusion has arisen in the minds of medical men about what drugs to use and when. The practitioner is inundated with literature from drug houses directly or he is faced with advertisements in medical journals, and he reads articles as to the value of this or that new drug in the treatment of particular diseases. At the same time articles appear recounting disturbing side effects, resulting from the administration of a new drug and varying from minor upsets to death.

The medical practitioner wants to understand the new drugs fully, to evaluate them wisely and to use them adequately in the treatment of patients. It has been stated that in 1940 about 45 new pharmaceutical specialties were introduced in the United States of America. In 1954 this total had risen to 550, and they are still appearing in bewildering numbers. D. P. Barr[1] states that in the lists of 1953 more than 140,000 medicaments were available and 14,000 new preparations were added during the year, and that 90% of drugs now in common use have been introduced within the last twenty-five years. Many of these drugs are really outstanding; some are very useful in special circumstances; others are dangerous unless used with the greatest care and with the patient under constant supervision. Attention has been drawn to some of these difficulties in connexion with certain groups of drugs which are greatly misused, such as the antibiotics.

A useful paper entitled "Some Abuses of Drugs in Therapy", by D. G. Friend and G. A. McLemore, which has recently appeared,[1] deals with a number of new as well as a few old drugs. The major pharmaceutical firms go to quite a lot of trouble to assess the value, the dosage, the toxicity and the dangers of any new drug they put on the market, but the field in which they work is a highly competitive one and new products are rushed on the market in the shortest possible time. The procedure seems to be, in most cases, something as follows. A new chemical compound is produced for some reason which is not always clear, the pharmacological effects of the substance are determined on a large number of laboratory animals, and a tentative dose for man is estimated. If the pharmacological results suggest that the substance might be of use in certain disease conditions, the chemical, in suitable form for administration to man, is submitted to a group of physicians who have access to a number of patients suffering from the particular disease condition. After some arbitrary number of patients have been treated, the physicians report back to the chemical firm, and if the report is satisfactory, a new drug is born, named and put on the market, and an article appears in some medical journal extolling its value. Then other groups of physicians or single physicians try the drug on few or many patients, and a series of articles appear. Some of these articles have no value, and of others the value is problematical because of defects in the methods used to assess the effects. It is not easy to assess the value of a new drug in a particular disease, and a rigid and carefully worked out system of treatment must be used to reduce to a minimum inaccurate conclusions. Among the things to be noted particularly are the number of patients treated with the new drug, the adequate use of controls, the mental effect of the use of a new form of treatment, the time over which the observations were continued, and whether a very careful watch for harmful or less disturbing side effects was kept.

The number of patients and the adequate use of controls are of particular importance. The placebo effect is apt to be prominent when only a few patients are examined, without adequate controls. Judgement is liable to be inaccurate, and to cut out mental bias the controls and patients tested with the drug should, if possible, be unknown to the investigator until the end of the observations. Far too many papers published on new drugs and their effects do not show that adequate attention has been paid to the experimental conditions. The time factor is also an important one. Does the drug continue to exercise a favourable effect after it has been in use for a lengthy period? Do untoward effects appear after some months of use of the drug? This is not uncommon. In particular, do injurious or even distressing side effects appear? This is a very real problem, and it is surprising how often blood dyscrasias, endocrine imbalances, drug allergies of greater or less severity, and electrolyte abnormalities follow the use of many of the new drugs. The manufacturing chemists take note of these when they are reported and

[1] *J.A.M.A.*, December 10, 1955.

[1] *New England J. Med.*, June 28, 1956.

frequently recommend, in their directions for use, that a particular drug should be used only when the patient can be constantly observed in hospital. Unfortunately too often the reputedly good effects of the drug alone are noted, and the drug is given to ambulatory patients seen only occasionally. Much has been written about the unwanted effects of the antibiotics, but these drugs are still used wrongfully where they cannot do any good and probably will do harm. Even the newer sulphonamides can be harmful if improperly used. Drug addiction has followed the misuse of many of the newer narcotic analgesics and even hormone preparations. Phenylbutazone is a valuable drug for the relief of pain in arthritis and other conditions, but it is also a very dangerous drug if improperly used, and many deaths have been noted following its use. Salicylates have long been known to cause gastro-intestinal irritation and hæmorrhage, but the appearance on the market of preparations containing a mixture of salicylates with cortisone or hydrocortisone will probably greatly increase the number of patients showing such symptoms, for the cortisones themselves often cause gastro-intestinal ulceration, hæmorrhage and perforation. Many of the new sedatives, such as promethazine, chlorpromazine, meprobamate, and benactyzine, are being used in fantastic amounts to bring about reduction of tension or excitement. Most of them have valuable effects, but jaundice may occur and agranulocytosis has been noted. When they are used, care should be taken to note even minor indications of toxic effect with cessation of treatment. Preparations of Rauwolfia and its derivatives can produce many undesirable and even dangerous effects.

A feature which is becoming increasingly common is the appearance of mixtures of two or more drugs often put out by small chemical firms who lack the facilities for testing their products. The belief is sometimes expressed, often based on no experimental evidence, that the mixture will be more effective or less toxic than the individual drugs, given alone. An example of this is the addition of vitamins to antibiotics, almost certainly quite useless. A swing back to the shotgun mixture of a hundred years or more ago is the appearance of tablets containing up to twenty different vitamins and mineral salts. These are commonly recommended for elderly people. They are often given with the idea that they may do some good, but anyway they will do no harm. However, most of these preparations contain folic acid, which may hide or worsen pernicious anæmia; some have almost dangerous amounts of cobalt or fluorine.

Is there any solution to the difficulty of selecting new drugs for treatment of particular diseases or symptoms? While, no doubt, it would be very difficult to put it into operation, it would be very helpful if it could be agreed that certain minimum standards concerning the number of patients tested, the use of controls, and the time over which observations are made could be demanded before a new drug is put on the market. If any medical man, having treated with a new drug a small number of patients with no adequate controls, feels the urge to write an article extolling the virtues of the drug, he should suppress his desire, for the article will most probably add nothing useful to the fund of human knowledge and may do harm by inducing another uncritical person to use the drug without proper supervision.

Current Comment.

SALICYLATES AS A CAUSE OF GASTRIC HÆMORRHAGE.

THE role of salicylates as a cause of gastric hæmorrhage is frequently overlooked, despite the fact that it has been recognized for a long time. Indeed, J. J. Kelly, junior,[1] points out that salicylates were not introduced into scientific medicine until 1876 (though they had been used in folk medicine since the time of Hippocrates), and yet by 1877 it had been learned that they were capable of producing nausea, vomiting, epigastric distress and occasionally gastro-intestinal hæmorrhage. These findings have been reinforced by a great many investigators since, ingested aspirin being the offender in the vast majority of cases. At the same time there have been many anomalies. It is a matter of common experience that the majority of people can take salicylates, including aspirin, with little or no obvious effect on the well-being of their gastro-intestinal tract. Moreover, some investigators have observed through the gastroscope hyperæmia and ulceration of the gastric mucosa when it came into contact with particles of aspirin. Other investigators examining other patients have failed to see this phenomenon.

In a group of cases reported by Kelly, in which upper gastro-intestinal hæmorrhage followed the ingestion of salicylates, the situation was similar in each case; bleeding was painless, free acid was found in the fasting stomach, and no radiological proof of the presence of an ulcer was adduced. Three patients experienced numerous bouts of melæna over many years; aspirin ingestion always preceded the bleeding. The results of the many investigations that have been made into this phenomenon are not conclusive, but from a review of them Kelly summarizes the position by stating that salicylates may cause bleeding from the gastro-intestinal tract by several mechanisms, operating either singly or in combination. These are by the production of hypoprothrombinæmia, by local tissue irritation, by gastric allergy, by an increase in gastric acidity, and by an effect on the gastric mucous cells or on mucin itself. The administration of salicylates appears to increase the frequency of bleeding in patients with proven peptic ulcers, but apart from this it is clear that a small group of subjects are much more susceptible than others. Kelly states that the mechanism of bleeding is not clear, either in patients with proven peptic ulcer or in the members of the other group who have neither symptoms nor laboratory evidence of peptic ulcer. A local mucosal factor may be the cause, but he considers it more likely that the aspirin, by augmenting the gastric acidity, brings about peptic erosion and bleeding. He advances the hypothesis that an observed seasonal incidence of peptic ulcer activation may be partially explained by the more frequent use of aspirin in the "ulcer months", which (he states) coincide with the peak period for upper respiratory tract infections and minor illnesses, such as the familiar "flu", for which the usual treatment is aspirin with rest. Another interesting aspect of the question that has arisen in recent years is the as yet somewhat obscure pharmacological relationship between the salicylates and the adrenal steroids. Both ACTH and cortisone may reactivate a peptic ulcer or produce an ulcer *de novo*, but it is not clear whether or not this is due to the fact that both of these substances have been shown to cause an increase in gastric acidity.

No doubt these matters will be resolved in time. The practical thought which needs to be constantly borne in mind is Kelly's advice that all patients who suffer from upper gastro-intestinal hæmorrhage should be questioned concerning the use of salicylates or proprietary drugs containing salicylates. This needs to be done with care, as aspirin is an almost universal form of self-medication, and many people would fail to think of it as a "drug". A

[1] *Am. J. M. Sc.*, August, 1956.

little trouble taken in clearing up this point may spare a patient future episodes of bleeding, needless operation (for subtotal gastrectomy has been carried out for bleeding probably due to aspirin ingestion), and perhaps even his life.

CORROSION IN METAL USED FOR INTERNAL FIXATION.

THE use of metal appliances for internal fixation comes in for criticism on various scores from time to time. A recent experience at the Birmingham Accident Hospital indicates how things may go wrong through a fault which is unrealized and thus escapes notice. The story, which is related by W. H. Cater and J. H. Hicks,[1] begins in 1950 when an outbreak of metal corrosion was noticed at the hospital in association with fractures treated by plating. The incidence seems to have been fairly high, and in a considerable number of cases it was necessary to remove the offending metal at a second operation. At length it became clear that one sort of screw was always involved. These screws were labelled "non-toxic", and the suppliers, a reputable firm, gave repeated assurances that the metal had been "passivated" and "electrolytically polished", and that it responded satisfactorily when "tested with a micro-ammeter". Suspicions were thus lulled, and various temporizing measures were instituted to avoid damage to the metal and to improve asepsis. Eventually, however, specimens of the screw were sent for independent analysis, and it was found that they were made of a stainless steel called E.M.S. Subsequently it was learned that the manufacturers of the screws, who were not the direct suppliers to the hospital, had in good faith changed the steel used for the manufacture of the screws, but the surgeons using them did not know of the change. For years the manufacturers had been using a stainless steel called F.S.L., but in an endeavour to meet complaints made about the thread of the screws, the change was made to E.M.S. for technical reasons. This all took place in 1950. After the position had become clear about the E.M.S. screws in the middle of 1954, the firm stopped supplying these; but meanwhile screws of this kind had been distributed all over the United Kingdom and overseas, and Cater and Hicks quote the fact that reports from various parts of the world told of trouble due to screws answering to the description given. A small survey was then made into hospital theatre stocks in the Midlands and in London, and an "amazing collection of metals" was discovered ready for use in some places. E.M.S. steel was discovered in an appreciable number of hospitals, as well as old stocks of steel plates and screws, including plates of ordinary steel dating from before the "stainless" era and quantities of soft iron wood-screws (the latter in only one hospital, fortunately).

Cater and Hicks condemn the use in a patient of any metal other than F.S.L., molybdenum steel or "Vitallium" ("Vinertia"), and at the same time urge the need for hospitals to check their theatre stocks. The equipment which they suggest for checking is simple, consisting of a strong magnet and a bottle of a test reagent named "D.L.12". They state that no safe metal is strongly magnetic, so that any item which is picked up with a click when the magnet is passed over the box must be thrown out. The use of D.L.12 provides a test for the presence of molybdenum in steel. A spot of this fluid placed on the metal turns brown if there is a useful amount of molybdenum present, and all such items can be considered safe by present standards. There remain the steel items that are feebly magnetic or non-magnetic and "molybdenum negative", including those made of F.S.L. and E.M.S. These two steels cannot be clearly differentiated without full analysis. However, further aids to identification are the type of screw and the date of purchase. Cater and Hicks add that their statement that molybdenum steel and "Vitallium" ("Vinertia") are safe has been made with slight reservation; that in fact is not absolutely true, but the problem is only a minor one at present. Their main point is that corrosion has almost completely ceased to exist as a clinical problem at the Birmingham Accident Hospital since the whole of the old theatre stock of steel was scrapped in 1954 and molybdenum steel was substituted.

[1] *Lancet*, October 27, 1956.

BRONCHOGRAPHY AND PERIPHERAL PRIMARY LUNG CARCINOMA.

THE numbers of deaths recorded from carcinoma of the lung continue to rise progressively. Though undoubtedly the increasing accuracy of diagnosis must account for some portion of the rise in the death rate, the increase has, by several means, been shown to be a real one. In fact, as A. McKenzie[1] suggests, far from being over-reported, it seems likely that many cases of bronchial carcinoma, especially in the aged, are not diagnosed. Not infrequently the diagnosis of carcinoma of the bronchus is not made until after a post-mortem examination has been carried out. Whatever the cause of this real increase in the incidence of carcinoma of the lung, the condition itself presents many severe problems to medical science. Despite the increasing skill of surgery and the aid of radiotherapy, the rate of cure in cases of carcinoma of the lung remains disappointingly low. This partial failure is in no small degree attributable to the difficulties inherent in the making of an early diagnosis. The wistful patient who has never been quite so well since some distant respiratory infection will all too frequently be beyond the bounds of modern curative therapy. Delay may sometimes occur when procedures such as tomography and bronchoscopy have failed to reveal evidence of a malignant neoplasm. The peripheral primary carcinoma may not be found by these means. In a series of 82 cases of primary carcinoma of the lung, G. Babolini and A. Biasi[2] found five instances in which the neoplasm spread out upon the surface of the pleura and in which there was minimal involvement of the pulmonary parenchyma.[3] In one of these cases the diagnosis was confirmed by a pleuroscopic examination which permitted visual examination of the pleura. Obviously in cases such as these bronchoscopy would give no help in diagnosis, and in the absence of plain radiological evidence the disease might well be missed. However, bronchography has become an efficient technique for the demonstration of the state of the periphery of the bronchial tree, and, as S. Kazinowski and T. W. Lloyd[4] have clearly demonstrated, bronchoscopy can be conveniently combined with bronchography in the examination of a diseased lung. The method is simple and effective and is a convenience to the physician as well as a kindness to the patient.

On the other hand, N. P. G. Edling[4] has recently made a plea for increasing care and attention to the diagnosis of early bronchial carcinoma, even when peripheral, by routine chest X-ray examinations before more specialized techniques are used to localize the lesion. The value of bronchography in the diagnosis of peripheral primary lung carcinoma has recently been discussed by C. L. N. Robinson and V. G. Peckar.[5] From their work in a series of 250 cases it is clear that the absence of signs of a neoplasm on bronchoscopy does not exclude the presence of a neoplasm. Consequently, in this series a bronchogram has been prepared in every case in which there were negative results to the bronchoscopy. With the exception of Pancoast tumours and the rare alveolar cell lesion, the bronchogram was diagnostic of neoplasm in over 90% of cases. The radiologically outlined appearance of the peripheral carcinoma may take the form of an abrupt arrest, a rat-tail irregular defect, a lateral irregular defect, or a missing branch in the bronchial tree. Of course the defects are of significance only if other segmental bronchi are well filled to the periphery. Retained secretions may cause

[1] *Brit. M. J.*, July 28, 1956.
[2] *Dis. Chest*, March, 1956.
[3] *Thorax*, March, 1956.
[4] *Acta tubero. scandinav.*, 32 : 1, 1956.
[5] *Brit. J. Tubero.*, July, 1956.

difficulties in interpretation, though not usually of any significance in the case of a primary neoplasm. Where there is a suppurative pneumonitis of a lobe or an abscess in a segment, the bronchogram reveals several apparently blocked segmental bronchi. A bronchogram is also of use in the exclusion of intrabronchial obstruction and in excluding or confirming the presence of a neoplasm when more than one system is involved. Robinson and Peckar consider that the bronchogram is essential for the exclusion of a primary neoplasm when the patient presents with hæmoptysis. In their view bronchography has supplanted tomography as a means of locating bronchial obstruction. With suspension of propyliodone there is no fear of residues of contrast media confusing later pictures, and as the medium is expectorated or otherwise eliminated in a few days, the operation need be little delayed after the bronchogram. The authors suggest that it is evident that peripheral carcinoma of the lung, although tending to spread by the blood-stream, is usually more favourable for surgical treatment and is often watched beyond the time during which a cure is possible. It is in the diagnosis of the peripheral carcinoma of the lung that bronchography is particularly valuable.

MUSCULAR EFFORT IN RUNNING.

THE last number of the British Medical Bulletin deals wholly with the physiology of voluntary muscle. An article of considerable interest at the present time is on "Muscular Effort" by R. G. Bannister. Dr. Bannister is not only a famous runner, he is also a highly competent experimental physiologist, his work, as one might expect, being mainly in the field of muscle physiology.

Running is peculiarly suited to a study of the factors involved in muscular effort. In foot-racing maximal muscular effort is frequently put out and an absolute breaking point is reached. It has been known for a long time that there is a decline in speed with increase in the distance run. This is related in part to the amount of oxygen which can be taken up and delivered to the contracting muscles and in part to the oxygen debt which may be incurred. In running short distances oxygen uptake is unimportant because there is not time for extra oxygen to pass from the lungs to the active muscle. Indeed in a 100 yards race it is often advantageous to hold the breath during the race, thus giving a rigid thorax. The rate of energy expenditure in sprinting at maximum speed is about 13 horsepower for an average man of which three horsepower is effective mechanical work, an efficiency of about 20%. In the middle distance races there is a steady fall of speed with increase in the distance run. The supply of energy is partly aerobic and partly anaerobic and the products of muscular metabolism act as major factors in limiting the performance. It has been claimed that steady running, that is, covering the same distance in each interval of time during the race, is the most efficient way of running. This may not be true, although many runners have used it, for the best times in the 440 yards race seem to have been obtained when the runner ran the first half of the distance at considerably greater speed than the second half. As the distance of the run increases anaerobic mechanisms become progressively less important. For long distances the work demanded of the muscle is well within the range of speed and force which it can easily maintain, and the limiting factor is the supply of metabolites—oxygen, glucose *et cetera*—to the muscle and the removal of waste products. Long distance running provokes the greatest respiratory and circulatory adaptations of which the body is capable. The speed of movement depends on the maximal oxygen uptake which can be maintained. Oxygen consumption may increase some fifty times. Adequate ventilation of the lungs must be balanced by adequate circulation through the lungs, and during maximal effort the adjustment is, to some extent, sacrificed in favour of greater blood flow and arterial anoxæmia may occur. The cardiac output may rise to more than thirty litres per minute. The vascular resistance in the muscles is presumably lower in athletes than in normal subjects, for the arterial pressure is not raised in spite of the higher output.

The part played by the autonomic nervous system in the smooth integration of exercise has been underestimated. The autonomic system controls changes of blood supply to skin, splanchnic areas and active muscle, and also regulates the body temperature when it rises too high for optimal muscle activity. In long distance running in particular oxygen supply is the weak link.

> The difference between athletes lies not entirely in differences of cardiac output or diffusion capacity; it lies rather, I suspect, in their capacity for mental excitement, which brings with it an ability to overcome or ignore the discomfort—even pain—in muscles and the brain which is probably caused by ischæmia and the consequent changes of blood lactate concentration and pH.

The late Professor F. S. Cotton, of Sydney, did a very considerable amount of work on the physiology of muscular effort and applied his findings in the training of athletes—particularly swimmers. It is unfortunate that he did not publish his work in detail, but there is no doubt that the application of the physiological facts which he found in the methods of training had much to do with the improved performances of Australian swimmers over the past few years.

BIOPHYSICAL INVESTIGATIONS OF URINARY CALCULI.

A 71-PAGE STUDY of biophysical methods of analysing urinary calculi has been published by Curt Lagergren, who writes from the Department for Physical Cell Research at the Karolinska Institutet, and the Röntgen Diagnostic Department, Karolinska Sjukhuset, Stockholm. It is well illustrated in monochrome with plates on art paper, mostly showing the architecture of calculi in section; magnification varies from five to twenty times, the method of reproduction being microradiography. The other illustrations show the peaks of X-ray diffractometer graphs and X-ray diffraction patterns of the 11 crystalline components found in calculi, recorded in a Debye-Scherrer camera. Specimens from 600 clinical cases were examined, of which 460 had their origin in the kidney and ureter, while the remainder originated in the bladder.

Microradiography provides a topical röntgenogram of the calculus, as well as information about the distribution of the various components throughout the stone; these components have varying absorptive power for X rays. The composition of different structures thus recognized was further studied by using a precise X-ray microdiffraction method. Eleven compounds were identified. Of these, four occurred commonly (over 30%); they were calcium oxalate, monohydrate and dihydrate, basic calcium phosphate (also known as apatite) and magnesium ammonium phosphate hexahydrate (commonly called triple phosphate). Uric acid was less common (below 10%); while four substances were rare (less than 4%)—calcium hydrogen phosphate dihydrate, tri-calcium phosphate, ammonium hydrogen urate and cystine. The rarest of all (less than 0·5%) were sodium hydrogen urate monohydrate and calcium sulphate dihydrate. It was found that in finely lamellar calculi made up of several crystalline components, individual lamellæ consisted of only a single component. It is pointed out that the chemical methods of analysis in common use cannot distinguish between similar substances—for instance, the three calcium phosphates which occur in urinary calculi.

Lagergren briefly discusses the significance of the topographic study of calculi with regard to known conditions of precipitation of the different crystalline constituents. Although the shortcomings of conventional clinical analysis are stressed, he admits, from a study of 80 cases by comparison of both methods, that there is a relative agreement in 70%. However, one great advantage of crystallographic methods is that only very small amounts

are needed for analysis; therefore very tiny calculi (say, one or two millimetres in diameter) can be accurately analysed.

While these precise topographical methods may be of great value in future ætiological studies, they do not offer any great advantages to the clinician over chemical analysis. One of our greatest problems is to try to prevent calculus recurrence; therefore we chiefly wish to know whether the stone is primarily of the alkaline, acid or oxalate type. In the case of mixed components, the mixture being as a rule an alkaline and oxalate one, the clinician covers both indications in his dietary interdictions. Uric acid and urate stones are usually pure, or else covered with only a thin layer of secondarily deposited phosphates—too thin to leave any doubt as to the primary nature of the stone. In everyday clinical work, the new biophysical methods are not likely to replace chemical analysis.

VENEREAL DISEASE LEGISLATION.

THE value of legislation in the control of venereal disease is much disputed and is perhaps impossible to determine with finality. Nevertheless, legislation of some sort is obviously necessary, and the World Health Organization[1] has done a useful service in presenting an analysis of the venereal disease legislation of about forty countries (Australia is not included). Some of the laws examined date from the last century; but most of those at present in force were enacted or amended after a war or period of foreign occupation—in other words, an episode during which abnormal living conditions led to recrudescence of venereal diseases. Some of these laws make provision for a system of control; others are more liberal in spirit and rely essentially upon the goodwill of the patient. In Denmark legal measures providing for free and compulsory treatment were promulgated towards the end of the eighteenth century, and further control measures were adopted in the nineteenth century. The Swedish law of 1918, which was amended in 1948, has been widely followed in other countries; by it treatment is compulsory for all infected patients, medical practitioners are required to trace sources of infection, infection or exposure to infection of another person is an offence, and under certain conditions patients suffering from venereal disease may be prevented from contracting marriage. On the other hand, the laws in Brazil require the collaboration of both patients and medical practitioners to be obtained by "measures of persuasion"; and the laws of England and Wales are stated to make provision only for free treatment facilities and the suppression of charlatanism and publicity. In some countries the earliest laws were enacted for the sole purpose of suppressing prostitution, and provisions relating to venereal diseases as such came much later; for example, in Belgium regulations relating to prostitution date from 1791, whereas the first law on venereal diseases as such was not enacted until 1945. The only international agreement for the control of venereal diseases is the Brussels Agreement of 1924, which relates to facilities to be given to merchant seamen for treatment.

It is disturbing to learn from this document that despite a decline in the incidence of venereal diseases in certain countries, available world statistics do not indicate an overall decline. In some countries the incidence of syphilis is decreasing; in many others it is not. In the countries for which reliable statistical information is available, there is no evidence that gonorrhœa is declining in incidence. Moreover, it is pointed out that even in those countries in which the incidence of venereal diseases has been reduced to a very low level, they still represent a potential danger. Existing foci of such diseases may easily flare up when social conditions are disturbed or during wartime, or when other factors favouring promiscuity are present. The speed of international traffic may also be considered a factor in the propagation of these diseases. Thus any tendency to abandon legislation designed to control venereal disease should be viewed with great caution.

A major factor in the decline in incidence of venereal diseases which has occurred in certain countries is undoubtedly the advance made this century (and especially in the past ten or fifteen years) in treatment measures. Significant contributory factors have been improved economic and housing conditions and better employment opportunities. The place of legislation is more obscure. In most countries venereal diseases, like leprosy and tuberculosis, have been the subject of separate legislation. In some countries they have been treated in the same way as other communicable diseases and included under common legislation. But the situation is so bedevilled by moral and social implications interwoven with the medical and public health aspects that lawmakers are faced with great difficulties; on the one hand patients are reluctant to report infections and the epidemiological circumstances of the disease, and on the other hand medical practitioners are reluctant to collaborate with the health authorities, both in notifying the disease and in tracing sources of infection. It is thus of considerable interest to examine how different countries have approached the legislative problems. The survey quotes a statement by Lade that when legal measures with respect to patients have to be taken, it must be borne in mind that a patient's illness "is a personal affair so long as he is not a public charge, until it affects others. But when the exercise of a personal right tends to interfere with the rights of others, it becomes a matter of public concern, a nuisance in a word". This question of the rights of the individual in relation to the rights of others is extremely thorny, and it has never been more to the fore than it is in the modern world. When it is added to the highly emotional factors surrounding the whole subject of venereal diseases and to the fact that many people have reservations on the value of legislative control of these diseases, we need not be surprised at the wide diversity of legislation on the subject throughout the world.

[1] "Venereal Diseases: A Survey of Existing Legislation"; 1956. Geneva: World Health Organization. 9½" × 6¼", pp. 44. Price: 3s. 6d.

FREEZING ANIMAL CELLS IN DILUTE GLYCEROL.

IT was discovered in the National Institute for Medical Research in London that spermatozoa could be frozen in the presence of glycerol, 5% to 20%, and kept almost indefinitely without forfeiture of activity when rapidly thawed. This new technique has been of considerable service not only in general biology but in the practice of artificial insemination in domestic animals, for the long preservation of sperm has been made a possibility. As is well known, erythrocytes are sensitive to freezing and thawing, and here again very promising results have been obtained. Another important application has been the long-term storage of pure cell culture strains; lowering the temperature to −60° or −70° C. has given after rapid thawing, one to two minutes, despite a year's subjection to the low temperature, perfectly viable elements. In virology and in the study of tumours the preservation of reliable reference material has been of value. In the domain of surgery tissues for grafting have been stored without any appreciable loss.

An elaborate investigation on the action of glycerol freezing on tissue cultures has been carried out by C. M. Pomerat and P. S. Moorhead in the University of Texas Medical Branch.[1] Some very modern techniques have been employed, such as phase contrast, time lapse and cinematographic records. The photographs of outgrowths of spindle and other cells are excellent. Out of the detailed results described, and mostly of academic interest, one finding of surgical importance may be picked out; epithelial tissues do not lend themselves to glycerol freezing as well as many others; thus an endocrine graft is more likely to be accepted than a skin graft.

[1] *Texas Rep. Biol. & Med.*, 1956, Volume 14, page 237.

Abstracts from Medical Literature.

PATHOLOGY.

Thymoma.

L. IVERSON (*Am. J. Path.*, July-August, 1956) has reviewed and reclassified 50 cases from the files of the Armed Forces Institute of Pathology which had been diagnosed as thymoma. There were eight neoplasms of teratoid type, having the histological appearances of seminoma or dysgerminoma. Five cases called thymoma were lymph nodes exhibiting reactive hyperplasia. Ten cases were examples of Hodgkin's disease, lymphoma and possible metastatic tumour. The remaining 27 tumours formed the material for study. Of the 27 tumours 14 occurred in patients without any manifestations of *myasthenia gravis*, and were circumscribed and encapsulated. They averaged eight to ten centimetres in diameter, though one was 15 centimetres. Calcium was sometimes deposited in the capsule. These tumours were divided into lobules by connective tissue septa of varying vascularity. The lobules were composed of indiscriminate mixtures of cells normally found in the thymus, though one type of cell predominated. The patients in the group without myasthenic symptoms ranged in age from twenty-four to seventy-one years, the average being fifty years. The clinical symptoms were those of pressure. Although some tumours were removed immediately after X-ray diagnosis, others were observed for as long as eight years before operation was performed, and one was an incidental finding at autopsy. None of the tumours exhibited any malignant characteristics. The 13 tumours associated with *myasthenia gravis* occurred in a younger age group. The average age was thirty-eight years. These tumours were of relatively short duration, most being removed within a few months of the first symptoms. The longest history was seven years. Although these tumours were sometimes diagnosed as carcinoma or lymphoepithelioma, in no instance did metastasis occur. The histological appearances were characteristic in this group. Those tumours occurring in patients without *myasthenia gravis* represented neoplasia predominantly of stromal or non-functioning elements of the gland. When associated with *myasthenia gravis*, however, the tumour was found to have a characteristic arrangement of large pale cells around thin-walled vessels with a variable number of lymphocytes in the pulp of the mass. This histological picture is believed by the author to be pathognomonic of thymoma in *myasthenia gravis*. The seminomatous tumours behaved as malignant tumours. The author contrasts thymomata with seminomata, and thymomata with lymphoid hyperplasia, pointing out the diagnostic features in each case. The conclusions reached are that thymomata are benign tumours, and that two histologically distinct varieties are recognizable. In patients without myasthenic symptoms there are stages of lymphoid proliferation, spindle-cell proliferation or stromal proliferation. Thymomata in patients with *myasthenia gravis* are characterized by the appearance of large, pale, epithelial cells, loosely mixed with lymphocytes, and often arranged in cords or clusters around vessels. The close association of myasthenic symptoms with the presence of large, pale, epithelial cells in the tumour suggests that these cells have an endocrine function.

Renal Sarcoidosis.

H. M. CAMERON (*J. Clin. Path.*, May, 1956) records a case in which involvement of the kidney by sarcoidosis caused death of the patient. The patient was admitted to hospital in a state of uræmia and died the next day. Six months previously he had been investigated and found to be suffering from sarcoidosis though no renal impairment was demonstrable. Typical sarcoid lesions were found at autopsy in the spleen, liver, lymph nodes, lungs and salivary glands. In the kidneys there was, in addition to a few typical "hard follicles", an extensive diffuse fibrosis, within which were scattered giant cells of sarcoid type, unaccompanied by the usual endothelioid cells. The renal insufficiency seemed to be due to the mechanical obstruction caused by the diffuse granuloma, which also affected the intrarenal arterial walls. There was very little renal calcinosis and no glomerulitis in this case.

Acute Porphyria.

J. B. GIBSON AND A. GOLDBERG (*J. Path. & Bact.*, April, 1956) describe the histopathological features in five fatal cases of acute porphyria. They state that in peripheral nerves, demyelination occurs in a random fashion and is often followed by axon degeneration. The nerves of the autonomic nervous system are similarly affected. These effects are visible after two weeks. Small areas of perivascular demyelination in the white matter of the central nervous system with some degree of retrograde neuronal degeneration are usually found. These changes are quite independent of hypertension vasospasm. While the authors are unable to postulate any mechanism for the neurological changes, the negative evidence suggests that the nerve lesions are not due to any toxic action of porphobilinogen or uroporphyrin. The actual mechanism by which the neuropathological changes are brought about is still unknown.

Renal Involvement in Sarcoidosis.

D. A. SCHOLZ AND F. R. KEATING (*Am. J. Med.*, July, 1956) describe eight cases in which there was renal involvement in sarcoidosis. All the patients were men. X-ray examination revealed bilateral miliary infiltration of the lungs in four cases and bilateral diffuse fibrosis in two. A large mediastinal tumour was found in one case, which proved to consist of circumscribed granulomatous masses. Bony involvement of the hands and wrists was demonstrated in two cases, and involvement of the skull was present in four. Hypercalcæmia was present in six cases, but in only one was there an abnormal serum phosphorus content. In every case there was albuminuria, and five patients had hæmaturia. The blood urea content was raised in six cases. Renal investigations revealed the presence of calculi in five patients and nephrocalcinosis in one. Two of the patients with renal calculi had normal serum calcium values at the time of study. In two cases there was renal insufficiency without evidence of calculus or nephrocalcinosis. The diagnosis of sarcoidosis was made on histological grounds in each case, once at autopsy. In three cases the initial diagnosis was hyperparathyroidism, but only one of the patients was subjected to surgical exploration. This patient was found to have large non-caseous granulomatous masses in the mediastinum. The other two suspected of having hyperparathyroidism were diagnosed correctly by lymph node biopsy. The authors point out that hyperparathyroidism without bone disease may be simulated by sarcoidosis. They recall that there are several cases in the literature in which there were negative results on exploration of the neck for a parathyroid tumour and later these proved to be examples of sarcoidosis.

Cortisone Effect on Hepatitis.

H. UNGAR, A. LAUFER AND D. DIENGOTT (*Am. J. Path.*, July-August, 1956) describe the effect of cortisone upon the localized inflammation and repair in the liver of rats following the implantation of surgical gut. The initial reactions were the same whether the animals were given cortisone or not. After two days the implanted gut was surrounded by a zone of necrotic liver tissue, and a zone of polymorphonuclear leucocytes around the gut had commenced to invade the necrotic liver tissue. Thereafter granulation tissue was found around the gut. In the cortisone-treated animals there was less granulation tissue with more rapid appearance of collagen and argyrophilic reticulin fibres. The absorption of the gut was retarded by cortisone treatment. If cortisone treatment was delayed until granulation tissue had formed, fibroblasts underwent rapid regressive changes, but the absorption of the gut was not retarded. Maturation of scar tissue was more rapid in the cortisone-treated animals.

Antibiotic-Resistant Staphylococcal Pseudomembranous Enteritis.

M. CORRIDAN (*J. Clin. Path.*, May, 1956) encountered antibiotic-resistant staphylococcal pseudomembranous enteritis in a patient who, in preparation for bowel resection, was given streptomycin and phthalylsulphathiazole. No malignant lesion was found at laparotomy, but some adhesions were divided and the appendix was removed. The administration of streptomycin and phthalylsulphathiazole was continued for two days post-operatively; so that in a period of six days the patient was given a total of six grammes of streptomycin and 40 grammes of phthalylsulphathiazole. On the second post-operative day he complained of abdominal distension and passed a large diarrhœal stool. An hour later he passed into severe peripheral circulatory collapse. The plasma urea content was found to be 95 milligrammes per 100 millilitres, the protein content 6·5 grammes *per centum*, the packed cell

volume 55%, the chloride content 85 milliequivalents per litre, the sodium content 142 milliequivalents per litre, the potassium content 5·2 milliequivalents per litre, and the bicarbonate content 9·5 milliequivalents per litre. An amount of 600,000 units of penicillin was injected intramuscularly. Despite resuscitative measures the patient deteriorated, became comatose on the next day, and on the fourth post-operative day died. Diarrhœa had been followed by fæcal incontinence. At autopsy the small and large intestines were distended by several litres of liquid fæces, and the mucosal surface of the small bowel, particularly of the ileum, was covered by a yellowish-grey, friable pseudomembrane. The large bowel showed a few petechial hæmorrhages of the transverse colon, but no membrane was present. Culture of fæces before and after death yielded a mixed growth, which included *Staphylococcus pyogenes*, phage-type 52/77. This organism was resistant to penicillin and streptomycin, but sensitive to chloramphenicol, oxytetracyline, chlortetracyline and erythromycin. No tests for enterotoxin production were carried out. The case illustrates the fulminating character of the infection, which was characterized clinically by diarrhœa, dehydration, electrolyte imbalance and peripheral circulatory collapse; pathologically there was necrotizing enteritis with formation of a false membrane.

Giant Cell Arteritis.

H. LANDER AND J. M. BONNIN (*J. Path. & Bact.*, April, 1956) describe the findings at autopsy in a case of giant cell arteritis. Temporal arteritis was diagnosed during life in an elderly asthmatic woman who also suffered from rheumatoid arthritis. She died as a result of pulmonary embolus. The autopsy revealed other manifestations of polyarteritis affecting the carotid artery, the aorta, and the main stem and branches of both coronary arteries and the superficial temporal, lingual, external carotid and ophthalmic arteries.

Hypercholesterolæmia and Intimal Repair of the Aorta.

J. T. PRIOR AND W. H. HARTMAN (*Am. J. Path.*, May-June, 1956) induced, by mechanical means, aortic intimal trauma on a group of rabbits maintained on a hypercholesterolæmic diet for periods of from two days to eight and a half months after the intimal injury. The injured segment had increased permeability to cholesterol, and fourteen days after trauma a plaque composed of lipid material and dense connective tissue was produced. This lesion was histologically identical with the human atherosclerotic plaques seen in the coronary arteries and the aorta. This experimentally produced lesion subsequently was characterized by necrosis and inhibition of connective tissue, so that forty-six days after injury the spontaneous and traumatically induced plaques were structurally similar. Reparative connective tissue was not impressive, nor was there significant dystrophic calcification within the spontaneous and traumatic lesions over the long periods. This inhibitory effect of cholesterol upon connective tissue repair may, in part, explain why the histological counterpart of the advanced human atherosclerotic lesion cannot be duplicated by cholesterol administration. A brief review of the results of other combinations of vascular trauma and hypercholesterolæmia is presented.

MORPHOLOGY.

Pathways from Basal Ganglia.

A. M. LAURSEN (*J. Comp. Neurol.*, February, 1955) describes Marchi preparations of brains made after lesions had been induced in the basal ganglia in three specimens of the monkey, *Macaca mulatta*. He reports that the origin of the *ansa lenticularis* is not confined to the medial division of the *globus pallidus*. Additional possible sources are the lateral division of the *globus pallidus* and the putamen. The tract may be joined by fibres from the temporal and insular cortex. Fibres from the basal ganglia were followed into various areas of the dorsal and the ventral thalamus and the hypothalamus, and into the red nucleus of the mesencephalon. The origin of the lateral corticohabenular tract is basal to the *globus pallidus*, presumably in the amygdala and the pyriform lobe cortex. Small electrolytic lesions in the *globus pallidus* result in no detectable abnormalities in behaviour in the macaque. A lesion destroying the *globus pallidus* unilaterally, and interrupting the fibres basal to the *globus pallidus* bilaterally, produces a marked reduction in the monkey's willingness to move. Peculiar jerks occurred whenever this monkey was touched.

Hæmato-Encephalic Barrier.

L. A. RODRIGUEZ (*J. Comp. Neurol.*, February, 1955) reviews the published investigations on the phenomenon of "hæmato-encephalic barrier", the term applied to the exchange characteristics of materials, not only between the cerebral vessels and the central nervous tissue, but also between blood vessels and the cerebro-spinal fluid. The anatomical site of the "blood-cerebro-spinal fluid barrier" has been generally accepted as being localized in the choroid plexus, but regarding that of blood-brain barrier, there has been no unanimity. The present author studied the histological site of the "barrier" by means of proflavine hydrochloride; injection of this into a vein results in the staining of the nuclei of the cells of all tissues except those of the central nervous system. The dye does not enter the vascular endothelium of the cerebral blood vessels, in contrast to the endothelium elsewhere. This indicates that the blood-brain barrier is localized in the endothelial cell membrane facing the lumen. The dye penetrates the choroidal epithelium, but does not enter the cerebro-spinal fluid. It is concluded that the cell membrane of the choroidal epithelium, facing the ventricular lumen, constitutes the blood-liquor barrier. However, administration of proflavine into the subarachnoid space does cause staining of the nuclei of the cells of the central nervous tissue. The glia or pia-glia membrane does not constitute a barrier. The dye penetrates the intraneural vascular endothelium after injection into the subarachnoid space. Because of this, and because of the prompt appearance of the dye in the extraneural tissue, it is suggested that the neural vascular endothelium is permeable from the direction of the central nervous tissue. Administration of proflavine into a ventricle reveals that the ependymal cells do not constitute a barrier because the dye penetrates freely into the central nervous tissue. Whether the choroid plexus is permeable from the direction of the ventricular lumen could not be ascertained. A physiological similarity between the choroidal epithelium and vascular endothelium is suggested.

Development of the Liver.

J. W. KINGSBURY *et alii* (*Anat. Rec.*, February, 1956), following reports that the classical concept of the liver as a compound tubular gland composed of "hepatic cords" is untenable, undertook an investigation on the development of the liver in chick embryos throughout the incubation period and in chicks after hatching. They conclude on evidence presented here that the conception of the liver as a continuous system of tubules most adequately explains its structure.

Cellular Elements in Peritoneal Fluid.

J. PADAWER AND A. S. GORDON (*Anat. Rec.*, February, 1956) discuss the use made of peritoneal fluid as a tool in oncological studies and in elucidating the mechanism of action of endocrine factors and of stress upon the eosinophile leucocyte and mast cells. Since most of these studies were confined to the rat and the mouse, it was considered desirable that a survey should be made of the peritoneal fluid obtained from other animals, to explore the possibility of species differences in types of cells and of differences in response to these elements to experimental stimuli. The numbers of each cellular type present were determined quantitatively. These included eosinophile leucocytes, mononuclear cells (macrophagic and lymphocytic elements) and mast cells. Wide variations in cell numbers and types were revealed among the various species tested, as well as between strains of a given species. Eosinorrhexis was demonstrated to occur in all animals in which the presence of eosinophile cells in peritoneal fluid could be demonstrated. It has been found that the concentration of cells in rat peritoneal fluid is a function of the amount of fluid, which suggests that under normal conditions a constant number of cells is present within the abdominal cavity.

Unusual Variation of the Ulnar Artery.

H. T. WEATHERSBY (*Anat. Rec.*, February, 1956) from dissection of 451 upper extremities, describes three cases of an unusual superficial ulnar artery. The course in the forearm between the *flexor carpi radialis* and *palmaris longus* muscles would possibly cause it to be mistaken for a superficial median artery. No description of this unusual pattern has been reported since Quain (1844) recorded two specimens in his study of 481 extremities.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on July 26, 1956, at the Robert H. Todd Assembly Hall, British Medical Association House, 135 Macquarie Street, Sydney, DR. E. F. THOMSON, the President, in the chair.

Acute Infections of the Ear, Nose and Throat in Childhood.

DR. RICHARD E. DUNN read a paper entitled "Acute Infections of the Ears in Children" (see page 824).

DR. S. E. J. ROBERTSON read a paper entitled "Acute Upper Respiratory Tract Infections in Childhood" (see page 827).

DR. G. A. W. JOHNSTON, opening the discussion on behalf of the Section of Pathology, asked Dr. Dunn to say something more about the pathogenesis of middle ear infections, particularly the exact manner of spread of organisms to the middle ear, and local factors which predisposed to infection. He said that Dr. Dunn had mentioned that middle ear infections were very silent in infancy, a statement which might apply to all ages, since it had been his (Dr. Johnston's) experience that mastoid infections were often revealed unexpectedly at autopsy if the mastoid air cells were examined routinely. That was an easy matter if the skull had been opened and should be carried out as a regular practice. Unfortunately, examination of other air sinuses of the skull was not included in regular post-mortem techniques, hence the present knowledge of pathology and bacterial flora was rather unsatisfactory. Dr. Johnston said that he agreed with Dr. Robertson's remarks about antibiotics; he very much appreciated the way Dr. Robertson had dealt with the contentious problem. He asked Dr. Robertson what he expected in the way of laboratory assistance in the diagnosis and management of upper respiratory tract infections. Dr. Johnston went on to explain that, apart from bacterial infections due to *Hæmophilus pertussis*, *H. influenzæ*, Group A streptococci, *Staphylococcus pyogenes*, *Corynebacterium diphtheriæ* and organisms isolated directly from the infected middle ear, the routine laboratory could not be of much assistance, because so many upper respiratory infections were primarily due to viruses. However, the role of bacteria as secondary invaders was a very important one, particularly in chronic conditions; and when possible, careful bacteriological examinations and antibiotic sensitivity studies were certainly well worth while. Bacteriological examination of a purulent discharge from the middle ear should always be carried out. Dr. Johnston mentioned that he had been interested in the condition, malignant laryngitis or acute laryngo-tracheo-bronchitis. He had read with interest reports of a number of cases occurring in Queensland, and he wondered what the incidence was in Sydney. The etiology of the condition was uncertain; *H. influenzæ* was thought to be the most likely cause. It was a condition often characterized by severe laryngeal obstruction, rather like a diphtheritic laryngitis; there might be very little in the way of general disturbance. Dr. Johnston also wished to ask Dr. Robertson a very difficult question: what was the treatment for recurrent cold and chronic sinus infection in young children?

DR. GEORGE HALLIDAY, on behalf of the Oto-Rhino-Laryngological Society of New South Wales (British Medical Association), challenged Dr. Dunn on his statement that he considered that paracentesis should be performed very early in acute *otitis media*. Dr. Halliday entirely disagreed with that treatment. He thought that they should turn their minds back to the days before antibiotics and sulphonamide drugs to get a true picture of what was the infecting organism in the middle ear. He knew that in 800 consecutive cases of acute mastoiditis in which operation was performed at the Royal Infirmary in Edinburgh, the pathological background could be roughly described in the following terms: about 78% were due to a streptococcus, about 15% were due to a pneumococcus, and the rest were due to *H. influenzæ* or *Staphylococcus aureus*, or failed to yield any growth of pathogenic organisms at all. It could be taken that those were at least the complicating organisms that caused acute *otitis media* in the ordinary upper respiratory tract infections, if for the moment the cases of gastro-enteritis were excluded. It should also be remembered that before the antibiotics came into fashion at all, the number of patients operated on for acute mastoiditis throughout university teaching hospitals in America, in England and in Australia dropped from an average of 60 per 600-bed hospital down to an average of three per year. Thus it was obvious that even before the antibiotics came into use, the sulphonamide drugs had had a vast influence on preventing those infections. For that reason it had been his practice, when he examined a patient with acute *otitis media* in the first forty-eight hours, almost to postulate that it was unnecessary to perform a paracentesis. He thought that a paracentesis on an ear drum should be performed only when one could reasonably conclude by careful examination that there was pus behind the drum head. Dr. Halliday finally congratulated Dr. Robertson on his attitude to the antibiotics.

DR. R. H. VINES said that he disagreed with what had been said on the question of antibiotics in upper respiratory tract infections, and particularly in regard to the treatment of *otitis media* in infancy. *Otitis media* in infancy should be clearly separated from *otitis media* occurring at a later period of life. The only series in which careful bacteriological investigations of *otitis media* in that age group had been carried out that he was aware of, one in Scandinavia and one in America, had both shown that the hæmolytic streptococcus played a very small part. *H. influenzæ* was responsible for something like 20% of the infections, and the pneumococcus was the most frequent offender. Dr. Vines submitted, in view of those bacteriological findings, that the exhibition of penicillin and sulphonamides (the administration of that combination must be a beastly experience for the child's mother as well as for the child) or a broad-spectrum antibiotic was indicated, in view of the sensitivity of those organisms. Dr. Vines considered that a broad-spectrum antibiotic was the one that should be given, and its administration should be continued for a long period; that was one of the things that should be stressed in the management of *otitis media* of infancy. Dr. Vines also disagreed with Dr. Robertson on the question of sulphonamides in the treatment of upper respiratory tract infections when the hæmolytic streptococcus was thought to be the offender. Dr. Vines understood from what Dr. Robertson had said that it was because of the possibility that the hæmolytic streptococcus was the infecting organism that he proposed to use the sulphonamides. Dr. Vines said that the work of Rammelkamp in particular had shown that if sulphonamides were used, the hæmolytic streptococcal infection would certainly be cured as an acute infection; but such treatment would not accomplish what it was intended to accomplish—the prevention of acute nephritis and rheumatic fever. Sulphonamides apparently did not eradicate the hæmolytic streptococcus as efficiently as penicillin, which in such infections was the agent of choice.

DR. N. H. MEACLE said that he had very recently seen two patients who had been treated with various new drugs, and the catarrhal type of *otitis media* had been left. In his opinion that was an indication for paracentesis. In the two cases the condition was hanging fire—and he thought that a little investigation would reveal many similar cases—and after paracentesis the condition cleared up in about twenty-four hours, whereas it had been entirely resistant to the drug treatment.

DR. W. H. CARY said that he agreed with the latter part of what Dr. Vines had said—if the streptococcus was present, it was essential to use penicillin, and useless to employ sulphonamides. However, Dr. Cary disagreed with the first part of Dr. Vines's statement. He thought that, as Dr. Halliday had said, in practice it was possible nearly always to control *otitis media* in childhood with the sulphonamides or preferably penicillin, although he did not like to give injections to a child. He did not think it necessary to have recourse to the broad spectrum antibiotics.

DR. B. J. BASIL-JONES asked Dr. Robertson why he excluded cervical adenitis from the stigmata of respiratory infections in children. Dr. Basil-Jones said that his experience was rather limited; but it seemed to him that they examined a great many children with enlarged cervical glands who had had only mild upper respiratory infections. They were usually under suspicion of having glandular fever, which was most uncommon in children. It seemed to pathologists that enlarged lymph nodes occurred in children on the slightest provocation, and he could not quite understand why Dr. Robertson had excluded them specifically from his discussion. He asked Dr. Robertson if he would explain that point.

DR. F. F. ELLIS asked whether the members of the Section of Pathology could tell him a little about the Friedländer bacillus infections, which seemed rather mysterious. He also asked what they thought of Dr. Dunn's opinion that the majority of cases of *otitis media* were due to the staphylococcus. Dr. Ellis also asked Dr. Robertson what he

thought of maintenance sulphonamide therapy in the prevention of upper respiratory tract infections.

DR. A. B. K. WATKINS said that he had noticed that Dr. Dunn had said that mastoiditis did not occur in very small infants, but only mastoid antritis. Dr. Watkins agreed that that was what ought to be the case, because they had been taught that at birth there was only a mastoid antrum and no other cells. However, in practice it was found that many affected infants had true mastoiditis, with a certain number of other cells besides the mastoid antrum. The reason was that such a child was precocious; there had to be a certain amount of precocity of development of those pneumatic cells before mastoiditis was possible. Such cases did occur, and were not particularly uncommon. When precocious development of that type occurred, often the cells involved were the zygomatic cells and the squamous cells; it should be emphasized that in an exploration on those small children great care should be taken to explore the zygomatic cells, and often it was surprising how high the cells went up. Dr. Watkins had had to go up as far as an inch to remove all the cells in the temporal bone of very small infants. Referring to the problem of gastro-enteritis and mastoiditis, Dr. Watkins said that it had been disputed for many years, and there were those rabid authorities who said that in every case of gastro-enteritis in children it was essential to perform a bilateral mastoidectomy. That had been practised in the past in America. On the other side there were those who ridiculed that treatment. Dr. Watkins thought that the right answer lay somewhere between the two, and Dr. Dunn had handled the matter very well. Dr. Dunn had referred to the finding of infection or fluid in small children *post mortem*, but he had not referred to post-mortem examination of the middle ear in adults. Dr. Watkins said that at the London Hospital, where he was trained, it was standard treatment at every autopsy to look into the tympanums. It was surprising how frequently infection was present when it had never been suspected, or there was fluid. The fluid could be accounted for simply by the fact that during slow death there was a good deal of accumulation of fluid in the naso-pharynx. When the patient died and became cold the air content shrank from the fall in temperature, and fluid was sucked up the Eustachian tubes. Dr. Watkins thought that had been found in about 70% of adult subjects examined *post mortem*. They were people who had not been suffering from gastro-enteritis, and Dr. Watkins thought that the proportion had been grossly exaggerated, although they should always be careful not to miss middle ear infections. Dr. Watkins went on to say that he would have liked to hear something said about labyrinthitis in scarlet fever. The old cases of scarlet fever, before there were so many drugs and antibiotics to combat the condition, were very severe, and were associated with very severe complications. One of them was labyrinthitis. Dr. Watkins said that they had been taught that if the labyrinth was completely dead, as proved by absence of function in the labyrinth or cochlea, then the labyrinth had to be extirpated and drained. He had had two cases in which the labyrinthitis was bilateral, and if he had done that he would have rendered the patient stone deaf in both ears. He had taken the risk, and both patients recovered. He had had further experience on the same lines, and hearing had recovered with only mastoid treatment. It should be emphasized that in scarlet fever no extirpation of the labyrinth should be performed until changes in the cerebro-spinal fluid showed that there were actual purulent changes in the labyrinth.

DR. D. G. CARRUTHERS said that he was still puzzled about why severe acute *otitis media* was relatively rare. Dr. Robertson had stressed and disagreed with the indiscriminate use of antibiotics and chemotherapy; but Dr. Carruthers was certain that, if there were many general practitioners present, they would say that they almost always used those drugs and used them extensively. Dr. Carruthers himself felt sure that that was why there was such a lessening in the incidence of the complications that they used to see—*otitis media*, acute mastoiditis and acute sinusitis. Dr. Carruthers thought that those substances were used, and used effectively. Perhaps in a hospital, where bacteriological and pathological control was possible, it might be reasonable to take a more scientific attitude to the question. At the same time, he thought that there must be something in between—that laboratory tests were not always the answer. He was convinced that the antibiotics must be used adequately and for a sufficient length of time. Although he was not called upon to treat the children early in their acute upper respiratory infections, he believed that the antibiotics were used and should be used. Another point on which Dr. Carruthers disagreed with Dr. Robertson was about the use of nasal drops. His experience was that in general they were harmless, that they could be used for a long period of time and that they were a help. If a child's nose was kept clear, the risk of complications was lessened. Dr. Carruthers used "Argyrol", "Argotone", ephedrine, "Neo-Synephrine" *et cetera* over long periods, and he had never seen harmful effects from them. Referring to the question of paracentesis, Dr. Carruthers said that nowadays they did not often have to perform it in acute *otitis media*. However, in some doubtful or borderline cases he thought it was practicable to make a small puncture—not the old incision that was recommended in the days when they had nothing to control the condition—and employ suction to withdraw the sticky mucoid exudate from the middle ear. That procedure would often lead to quick resolution.

DR. W. F. SIMMONS said that he had been thirty-seven years in general practice, and a resident medical officer at the Adelaide Children's Hospital and later its superintendent. The thing that had struck him in the last fifteen years was the great diminution in the number of infective conditions of the mastoid. He believed that the chemotherapeutic substances had certainly helped those in general practice—the sulphonamides first, and later penicillin—in reducing the number of patients who required to be sent on to the aural surgeon. Dr. Simmons agreed with Dr. Carruthers's comments; he had found over the years that the use of ephedrine and of ephedrine combined with "Argyrol" had also helped affected children, particularly very small children. On behalf of the general practitioners, Dr. Simmons said that he believed that the chemotherapeutic substances and the antibiotics particularly—he did not favour the broad-spectrum antibiotics at all—and nasal drops did play a part in the diminution and the curtailment of the complications which used to be encountered in general practice before about 1939.

DR. G. M. B. HALES, also a general practitioner, supported Dr. Simmons's remarks. He said that there had certainly been a very big drop in the number of patients with middle ear infections who had to be sent on to the aural surgeons, or who required paracentesis. He did not think it was purely due to the newer antibiotics, because everybody had exerienced the same drop. He found that he very rarely used anything but penicillin or the sulphonamides.

Dr. Johnston spoke again in reply to Dr. Ellis's question about Friedländer's bacillus. He said that it was a Gram-negative capsulated organism of the coliform group. It occurred in the alimentary tract and was not uncommonly found in the sputum as part of the general bacterial flora. In certain conditions—for example, atrophic rhinitis—it might be the only organism isolated, and then usually in very abundant growth. It would not be surprising to find it in middle ear infections; as Dr. Dunn had mentioned, Gram-negative coliform organisms often found their way into the middle ear. In the lungs it had been described in ætiological association with acute suppurative pneumonitis, sometimes going on to extensive fibrosis and cavitation. Its exact role as a pathogen was difficult to assess.

Dr. Dunn, in reply to Dr. Johnston's question about the mode of bacterial infections of the middle ear, said that, with reference to the incidence in bottle-fed infants, there were reports of numerous observers, who had found milk in the mastoid antrum at operation and *post mortem*. When bottle fed, the baby might be allowed to lie on its back, thereby allowing milk to find its way into the naso-pharynx, and so into the tympanum via the Eustachian tube. There the milk stagnated and became infected, producing *otitis media*. There were various theories about the mode of entrance of the bacteria in *otitis media*. The usually accepted theory was that bacteria spread up the Eustachian tube by continuity of tissue, aided by forcible blowing of the nose, coughing and sneezing. The Eustachian tube became swollen and blocked, a vacuum formed in the middle ear, and serum was secreted by the cells lining the tympanum; the resulting stasis led to infection of the serum, and so an abscess was formed. The possibility of infection through the blood and lymph stream existed, but was difficult to prove. Dr. Johnston's query regarding the mildness of systemic disturbances in a certain type of mastoiditis was possibly in reference to that due to a type III pneumococcus. It was said to be an insidious and progressive disease, not producing a rise in temperature, painless and with considerable progressive destruction of bone in the mastoid area. Dr. Dunn said that occasionally the condition occurred in Sydney, although he had not encountered it himself. In reply to Dr. Halliday's remarks on paracentesis of *otitis media* in infants, Dr. Dunn said that in his own paper he had been quoting T. G. Wilson, and the treatment seemed somewhat bloodthirsty even in his view; so that he was a little inclined to agree with Dr. Halliday. Dr. Dunn said that he had referred to

paracentesis of infants in that fashion, mainly to draw attention to what he thought was a prevailing tendency to depend largely on chemotherapy and antibiotic treatment.

Dr. Robertson, in reply, said that perhaps from cowardice or perhaps from lack of knowledge, he had confined his paper to acute upper respiratory tract infections, and had carefully kept off recurrent acute upper respiratory tract infections. In reply to Dr. Johnston's question about the role of the laboratory in the infections under discussion, Dr. Robertson said that until easier virus investigations could be carried out, laboratory help was largely confined to the isolation of the hæmolytic streptococcus, and the exclusion of diphtheria. Dr. Johnston had also asked about acute laryngo-tracheo-bronchitis. Dr. Robertson said that it was a very serious illness, which fortunately was extremely rare in Sydney. There were occasional epidemics of it at the Royal Alexandra Hospital for Children, but there had been no such epidemic for about two years. They had never been able to satisfy themselves that any particular organism was the cause; the overseas literature strongly implicated *H. influenzæ* and also *Staph. aureus*. Others were inclined to think it was due to a specific virus. Dr. Johnston had further asked what Dr. Robertson thought about recurrent colds and recurrent sinus and middle ear infections. Dr. Robertson thought that a subject for an entire meeting, and preferred not to attempt to answer the question. Dr. Vines and Dr. Cary had put some difficult questions. Dr. Robertson said that he knew the articles mentioned by Dr. Vines, in which the pneumococcus and *H. influenzæ* were implicated. He reminded Dr. Vines that as far as he knew the investigations had not been repeated. Dr. Robertson thought there was no doubt that, if the administration of the broad-spectrum antibiotics was continued long enough, they would eradicate a chronic infection of the ear. However, he very much doubted whether they would eradicate it for very long. Usually such an infection returned fairly promptly. In reply to the question whether the sulphonamides would eradicate the hæmolytic streptococcus, Dr. Robertson said that Rammelkamp claimed to have shown that the hæmolytic streptococcus was not eradicated in the infections under discussion. Against that, Dr. Robertson pointed out that the prophylaxis of rheumatic fever with sulphonamides had been in progress for some time, and as far as he knew comparatively small doses had been thoroughly successful in keeping the upper part of the respiratory tract free from the hæmolytic streptococcus. Dr. Robertson could not say that Rammelkamp was wrong, but again, his work had not been repeated. In reply to Dr. Basil-Jones, Dr. Robertson said that the type of cervical adenitis to which he was referring was that characterized by grossly enlarged glands and the presence of fluctuation—in other words, acute purulent cervical adenitis, and not the mild generalized enlargement of discrete glands in the neck. Dr. Ellis had asked about maintenance sulphonamide therapy. Dr. Robertson said that it had been used for rheumatic fever prophylaxis, prophylactically for the prevention of flare-ups in bronchiectasis, and also for the prevention of recurrent pyelonephritis. It had not been popular for prevention of upper respiratory tract infections, until the recent publication of the articles on that subject in the *British Medical Journal*. It seemed reasonable to carry it out, and possibly in many cases it would be a help. Dr. Carruthers, Dr. Simmons and Dr. Hales had stressed what was undoubtedly true—that since the advent of the antibiotics, the more serious complications of upper respiratory tract infections had become rare. Dr. Robertson said that he had not practised in the pre-antibiotic era, so he did not know from his own experience. However, he thought that possibly there might have been an improvement in the nutritional state in childhood since that era. Despite the disappearance of the more serious complications, he thought that there were today large numbers of children who had recurrent upper respiratory tract infections of a mild degree. A child developed an acute upper respiratory tract infection, he was immediately treated with the parenteral administration of an antibiotic, the infection settled down, and before very long another occurred. Such children presented a perennial problem in all types of medical practice. Dr. Robertson wondered whether, if one was to adopt a more conservative attitude, by watching such children carefully for complications and treating them should they arise, but otherwise concentrating on the effects of symptomatic therapy *plus* the development of resistance to infection and measures directed towards the general health, one might not prevent many recurrences of those troublesome respiratory infections which were very common. With regard to what had been said about nasal drops, Dr. Robertson said that he had only expressed his personal opinion, and he was prepared to defer to more senior opinions. However, he wished to mention that a well-known text-book of paediatrics, that of Mitchell-Nelson, agreed that vasoconstrictor nasal drops, if used for a long period, would cause irritation of the nasal passages themselves, and secondly, that many vasoconstrictor nasal drops were difficult to administer to some children and caused a certain amount of pain. Some mothers complained that the administration of the drops cost them a daily struggle, and that might be a reason for not using them unless they were really necessary.

Dr. Thomson, from the chair, said that there was one point he wished to make. The discussion had been about virus and bacterial infections of the upper part of the respiratory tract, and the question of bacteriological diagnosis had been raised. They all knew that a bacteriological laboratory was not available to everybody with ease. However, there was a very simple procedure which he thought could help in the differentiation between a bacterial and a virus infection—the making of a blood film, staining it and examining it. If a neutrophile leucocytosis was present (and that could be found out even without counting), then the chances were that a bacterial infection was present. If, on the other hand, lymphocytosis or monocytosis was present, and possibly leucopenia, the chances were that the infecting organism was a virus. That might not always stand a rigid test, but in the absence of a bacteriological examination it was a simple way of attempting to distinguish between the two. Dr. Thomson went on to say that he had been very interested in the remarks about the antibiotics. Dr. Dunn had used the words "using penicillin blindly", and other speakers had referred to the use of penicillin and sulphonamide drugs. But it should not be forgotten that sometimes one had to deal with a staphylococcal infection. At the present time, throughout the whole community, there was a 25% chance that any staphylococcal infection would be penicillin-resistant, and the patient's life might be lost because of that. Dr. Thomson thought that if the clinician used penicillin blindly and the patient did not respond within forty-eight hours, then the infection was due either to a virus or to a resistant staphylococcus, and it might be wise to change the therapy. Dr. Robertson had referred to phenylmethylpenicillin, penicillin V. There was no doubt that it was going to play a large part, especially in the treatment of children. They should remember that penicillin V would give comparable blood levels to those produced by injectable penicillin at doses of 200,000 units. At higher dosage levels penicillin V did not compare with injectable penicillin. The considered opinion at the moment was that penicillin V had replaced penicillin G for oral therapy in the 200,000 unit dose level, but above that penicillin V would not replace injectable penicillin. There was no doubt that in the treatment of children penicillin V would be of tremendous help. It also had to be realized that in using penicillin V, one had to give the dose in milligrammes and not in units. That was a little confusing. Dr. Thomson understood that the unit-milligramme dosage varied with the maker of the particular type of penicillin V, and the nearest approximation was that 60 milligrammes of penicillin V equalled roughly 100,000 units. The only other point about penicillin V was that it was not on the market. There were phenoxymethylpenicillin, which was the basic substance, and also a proprietary preparation which was the calcium salt of phenoxymethylpenicillin. It was believed that the calcium salt was not so good as the basic substances, and for that reason it would be wise to use phenoxymethylpenicillin and not the calcium salt.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

THE DIPLOMA OF SIR JOHN JAMISON.[1]

We the Rector-Promotor, the Masters of the Colleges, The Dean of the Faculty of Arts and the other Professors of St. Andrews University Scotland to Readers greetings. Since it is fair and reasonable that those, who by much study have acquired knowledge, should receive due recompense for their Zeal and should stand out before the unlettered

[1] From the original in the Mitchell Library, Sydney.

populace by means of certain distinctions and privileges, so that they themselves may benefit thereby and also industry in others may be encouraged, since also those most liberal rights granted of old by St. Andrews University have this particular object in view that, as often as the occasion demands, it can honour only suitable men in any faculty even by the highest honours that pertain to that faculty.

And since John Jamison a most distinguished man and a Master of Arts, after the fulfilment of several years diligent work in medicine has acquired this great skill in all branches of medicine with the objects of course, that, marked out for praise by many instructors in medicine and being skilled in that art he might earn the highest degree.

For these reasons we concede to the above named Master John Jamison the power, full and unrestricted, to teach, instruct, practise, or in any way improve the art of medicine, and to do all those things which pertain to that particular faculty, and in order that each and every privilege, profit, opportunity, and honour which is due to doctors of medicine all over the world may be conceded to him, we wish him to be honoured with the title and degree of Doctor of Medicine and to be henceforth universally considered a capable and distinguished doctor as a guarantee of which we give this certificate.

Given under our hand and confirmed by seal of our Alma Mater the University of the City of St. Andrews this fourteenth day of March in the Year of our Lord 1808.

GEORGE HILL, Vice Rector and Promotor,
JACOBUS McDONALD, Professor of Physiology, Dean of the Faculty of Arts,
JACOBUS FLINT, M.D., Professor of Medicine and Anatomy, and eight others.

[Sir John Jamison was a son of Thomas Jamison, who came to Port Jackson with Governor Phillip as surgeon's mate on the *Sirius* and subsequently spent over ten years as an assistant surgeon in Norfolk Island. In 1803 he was appointed Principal Surgeon in the Colony. He died in England in 1811, having gone there to attend court martial proceedings consequent on the deposition of Governor Bligh. John Jamison entered the navy as a surgeon, and in 1807 was on service in the Baltic. He gave very effective assistance in the suppression of an outbreak of cholera in the Swedish army, for which service he was knighted by Charles XIII King of Sweden. He arrived in Sydney in 1814 to take over the property he had inherited from his father. He greatly increased his holding, and built a large house, "Regentville", near Emu Plains. He was a member of the Legislative Council for six years and was the first President of the Agricultural Society of New South Wales. He did not engage in medical practice in the colony. He died in June, 1844.]

Correspondence.

THE PLURIGLANDULAR SYNDROME WITH THE REPORT OF A CASE.

SIR: With regard to Dr. K. F. Fairley's article "The Pluriglandular Syndrome with the Report of a Case" (M. J. AUSTRALIA, September 29, 1956), may I be allowed to offer the following comments?

The clinical features and the results of the laboratory investigations of the case described appear to me to be those of hypopituitarism rather than of primary Addison's disease.

1. The fact that the symptoms of hypothyroidism and adrenal insufficiency as well as changes in the exophthalmos appeared all at about the same time suggests a common factor in their causation, and this could be the result of hypofunction of the pituitary.

2. The argument that the changes in the size of the remnant thyroid nodule and increase in the protein-bound iodine were the result of the correction of the primary adrenal deficiency by cortisone does not follow. Thyroid function is not affected in most cases of primary Addison's disease, as shown by the normal uptake of I^{131} and normal protein-bound levels in the serum (Hill *et alii*, 1950).

3. Cortisone with additional thyroid and gonadal hormones, as given successfully to the patient in this case, is now the classical treatment for hypopituitarism (Garrod, 1956).

4. Adrenal deficiency in the cases with coexistent hypothyroidism is the result rather than the cause of the hypothyroidism (Konigsberg and McGavack, 1954). It has also been shown that in hypothyroidism the production of ACTH is decreased, leading to secondary depression of the adrenal cortex (Garrod and Gilliland, 1954). Thus it seems probable that in the described case the adrenal cortex was under double strain, from the primary deficient pituitary and from the deficient (after early operation) thyroid. That probably caused eventual exhaustion and atrophy of the adrenal glands, giving a clinical picture resembling primary Addison's disease.

5. The peculiar distribution of the pigmentation, atypical for primary Addison's disease, can well be explained in terms of pituitary hypofunction and arising out of this ovarian insufficiency. It is known that even complete Addison-like pigmentation can result from primary hypopituitarism, as shown by Steinberg *et alii* (1954), who characteristically named their case "pituitary Addison's disease".

6. The patient's improvement on cortisone without the necessity of adding DCA, or, at least, sodium chloride, seems also to rule out primary Addison's disease. This may well be explained in this case by adrenal independence of pituitary control in regard to secretion of aldosterone and, through it, salt metabolism (Luetscher and Axelrad, 1954).

7. The idea that lack of response of the adrenal gland to exogenous ACTH proved primary Addison's disease does not follow. It could result from adrenal atrophy due to deficiency of pituitary stimulation, and it has been shown (Christy, 1955) that in those cases the response of the adrenal to ACTH will depend on the duration and severity of the hypopituitarism. An analogous relationship has been found between the pituitary and thyroid, when the latter in long-standing cases of hypopituitarism can become irreversibly atrophied and thus not be able to respond to thyrotrophic stimulation (Fraser and Garrod, 1955).

8. The predisposition to coma, water intoxication *et cetera* is known as a characteristic feature of hypopituitarism. The favourable response of those cases to cortisone means only that the secondary adrenal insufficiency was a predisposing factor, but can be no evidence of primary Addison's disease.

9. The fact that the patient suffered from a diffuse toxic goitre at the age of eight and persistent exophthalmos after thyroidectomy till the age of eighteen, taken together with the spontaneous disappearance of the exophthalmos at that age, again makes it probable that the disease was primarily situated in the pituitary gland. The hyperfunction, as evidenced by thyrotoxicosis and exophthalmos, was followed in this gland by subsequent exhaustion and insufficiency.

Now a few words about nomenclature. On the basis of the above comments it does not appear justified to classify the case under consideration as a pluriglandular syndrome, but as one of hypopituitarism. In any case it would be difficult to understand how a case can be considered as a primary Addison's disease and at the same time classified as a "pluriglandular syndrome". The latter term applies only to those rare cases, as described, for example, by Rickards and Barrett (1954), and others where an endocrine disorder results from simultaneous primary anatomical changes in several endocrine glands.

Finally, I would just like to mention that the practical conclusion, which has to be drawn from this case, is the need for great care in advising surgical treatment in juvenile cases of hyperthyroidism. That would be in accordance with the views of Wilkins (1950) and Allan, Rose and Rose (1954).

Yours, etc.,

MICHAEL BLOCH.

100 Collins Street,
Melbourne,
October 25, 1956.

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THE USE OF PETHIDINE AND THIOPENTONE BY CONTINUOUS INTRAVENOUS DRIP DURING THE FENESTRATION OPERATION.

SIR: Since our paper, "The Use of Controlled Hypotension Combined with the Local Use of Adrenaline as an Aid to the Fenestration Operation" (M. J. AUSTRALIA, February 28, 1953), appeared, we have performed approximately a hundred more such operations. The method we then described—namely, the induction of a moderate degree of arterial hypotension achieved by the use of small doses of hexamethonium bromide, the local injection of adrenaline with local anæsthetic solution and the local application of adrenaline, together with a general anæsthetic of nitrous oxide administered endotracheally by spontaneous respiration, supplemented by thiopentone and pethidine—has continued to be satisfactorily employed. A variation in the application of the method which we now employ is to give the supplementary thiopentone and pethidine by continuous intravenous drip. The solution is prepared by adding 200 milligrammes of pethidine and 1·5 grammes of thiopentone to a litre of normal saline. In this dilution precipitation does not occur as it does when the 5% strengths are mixed, and the resulting solution is clear or slightly opalescent, depending upon the brand of thiopentone used. The drip is set up when the patient enters the theatre, and the thiopentone and gallamine used for induction is injected into the tubing. The drip is run at about 120 drops per minute initially, but after half an hour it is slowed to a rate between 40 and 80 drops per minute, depending upon the patient's reaction.

The continuous intravenous drip of thiopentone and pethidine used to supplement nitrous oxide facilitates the administration of a smooth anæsthetic of even depth, and would be suitable for operations other than the fenestration operation where a light plane of narcosis only is required. In our hands the use of the thiopentone-pethidine drip has been more controllable than intravenous drips of either thiopentone or pethidine alone. Respiration frequently slows, sometimes to as few as six breaths per minute, but there is a corresponding increase in depth, sometimes to an amazing degree, so that the minute volume is probably unchanged. Recovery is usually rapid post-operatively.

Average doses of injected drugs used for a three-hour anæsthetic would be: thiopentone, 1·25 grammes, including 0·5 gramme injected from a syringe for induction; gallamine, 80 milligrammes; pethidine, 100 milligrammes; hexamethonium bromide, 20 milligrammes.

Yours, etc.,

DENIS O'BRIEN,
W. H. J. COLE.

Melbourne,
October 4, 1956.

REDWETTING.

SIR: Now that an electric apparatus for the treatment of bedwetting can be hired or bought from several sources, it might be helpful to review its use. It is likely to succeed in true functional enuresis, which is caused by a simple failure in development of bladder control. The primitive infantile bladder reflex is to empty as soon as a certain intravesical pressure is reached. As the child grows, control develops in response to such stimuli as dislike of a wet bed, social pressure and example. The electric training apparatus, by suddenly waking the child as soon as he starts to pass urine, supplies a sharp and sudden reinforcement of these stimuli, and in suitable patients bedwetting ceases in from two to six weeks.

Before deciding to use this method more serious causes of enuresis must be excluded. They are:

1. Diseases that cause polyuria—*diabetes mellitus, diabetes insipidus*, chronic renal sclerosis from any cause, functional polydipsia.

2. Urinary infections, acute causing temporary and chronic sometimes causing continuous symptoms. Vaginitis and urethritis are important members of this group.

3. Congenital anomalies of the urinary tract: (*a*) causing partial obstruction and infection; (*b*) causing impaired renal function and compensatory polyuria (hydronephrosis, polycystic disease *et cetera*); (*c*) ectopic ureter, bypassing the bladder and causing a constant dribbling incontinence.

4. Spinal lesions, interfering with bladder innervation (spinal tumour, *spina bifida et cetera*). These almost always interfere with skin sensation, too.

5. Thread worms in girls.

6. Mental and emotional causes: (*a*) Emotional stress. This may be very varied in nature. Severe stress may cause constant and prolonged bedwetting and sometimes daytime symptoms. It may include excessive self-consciousness about bedwetting. Minor or temporary stress may cause temporary recurrences of enuresis. (*b*) Long, very deep sleep, from which the call of a full bladder cannot wake the child. (*c*) Mental retardation. (*d*) Rarely deliberate delinquency.

In assessing an enuretic child the history and examination should aim at excluding these causes and can usually do so. The history must consider duration and constancy of symptoms, thirst, urine output, daytime symptoms like urgency, frequency of impaired stream, and the child's emotional state. Physical examination must exclude the kidney and bladder areas, lower spine, genitals, sacral sensation and blood pressure. The urine must be examined for albumin, sugar, pus and a low fixed specific gravity. If possible, the urinary stream should be observed.

The child who is free from daytime urinary symptoms, in whom nothing can be found in the above examinations, in whom there is no marked emotional disturbance and who is at least six years old, is suitable for treatment. Usually he is a child who has had enuresis all his life except for short periods. If enuresis recurs after a very long period of freedom, there is usually some physical or emotional cause. Young children may be frightened by the apparatus. Apprehension in the older child may be helped by mild sedation. In the child who sleeps so deeply that even the machine cannot wake him d-amphetamine at bedtime may help.

I believe that in properly selected patients this apparatus provides the best prospect of cure. In unsuitable patients it may do harm rather than good.

Yours, etc.,

D. G. HAMILTON.

135 Macquarie Street,
Sydney,
October 23, 1956.

OCCUPATIONAL HEALTH IN AUSTRALIA.

SIR: Your editorial "Occupational Health in Australia" (M. J. AUSTRALIA, October 27, 1956) is timely.

It is of more than historical interest that the searching inquiry into undergraduate teaching revealed that Queensland, with the youngest medical school (the first class graduated in 1940), was doing most in imparting to medical students a knowledge and an understanding of occupational health; and was doing so within the erstwhile Department of Social and Tropical Medicine. A recognition of the importance of such a department, and of the necessity for the inclusion of relevant subjects in the medical curriculum, is stated to have encouraged the Government of the day in its decision to finance the establishment of a medical school within the University of Queensland.

The writer of your leader may perhaps have been unaware of the use, within the department concerned, of the "project method" of teaching. The late Dr. E. S. Meyers, M.B., F.R.A.C.S., a Founder and Dean of the Faculty, served, as Acting Honorary Professor, as head of this department from 1946 until his retirement in 1955, gradually moulding the course and improving the quality of its content. His institution of the project method was the most recent advance—students investigating individually such projects as "Factors Influencing the Industrial Accident Rate", "An Assessment of Working Conditions in a Brisbane Factory", "The Problem of Disorders of Feet in an Infantry Regiment", and "The General Health of Native Workers on a Tea Plantation in New Guinea". The student was able to investigate his chosen topic during a long vacation, was able to discuss any queries both with a relevant specialist visiting lecturer, and with the head of the department. His "project essay" formed part of his examination in social and tropical medicine. At least two such projects, one concerning dermatitis due to dry-cleaning solvents, and one concerning the incidence of tuberculosis in rural workers in North Queensland, appeared as original contributions to THE MEDICAL JOURNAL OF AUSTRALIA.

Sir Charles Hercus, Professor of Preventive Medicine of the University of Otago (where the "project method" of teaching is also used), visited the department several years ago, meeting most of the visiting special lecturers. He indicated that he thought highly of the scope and standard of the work of the department. Only in an adequately led and supported department can such divers subjects be imparted and coordinated in the undergraduate curriculum as occupational health, tropical diet and hygiene, forensic medicine, child welfare, industrial hygiene, public health *et cetera*. The students' "projects" were supplementary to the lectures and organized visits by small groups to several factories and to institutions concerned with the health of the community at various ages and stages. The "project method"—a method of "learning by doing"—is eminently applicable to the teaching of social and tropical medicine, in which is included occupational health.

Yours, etc.,

R. I. MEYERS.

Sydney,
October 31, 1956.

The College of General Practitioners.

VICTORIA FACULTY.

AT a meeting, convened by the Australian Council of the College of General Practitioners and held in the British Medical Association Council Chamber, Melbourne, on November 1, 1956, the College of General Practitioners Victoria Faculty was founded.

The following provisional executive officers were elected: *Provost*, Dr. R. W. Weaver; *Chairman*, Dr. M. O. Kent Hughes; *Vice-Chairman*, Dr. E. A. C. Farran; *Honorary Treasurer*, Dr. R. D. Bartram; *Honorary Secretary*, Dr. David Zacharin, 328 Dandenong Road, East St. Kilda, S16, Victoria, to whom inquiries for application forms for membership or associateship may be directed.

The necessary qualifications, subject to approval of applicants by the Board of the Faculty, are as follows: (*a*) Members: Graduates of at least seven years' standing, with a minimum of five years spent in general practice. (*b*) Associates: Graduates of at least two years' standing and engaged in general practice.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, No. 64, of November 1, 1956.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Honorary Physicians and Surgeons.—The appointments of Surgeon Commanders Kenneth Charles Armstrong and

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 10, 1956.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	..	3(3)	1	..	..	..	..	..	4
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	4	..	..	..	..	..	4
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	1	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	6(3)	14(13)	2	..	..	..	..	..	22
Diphtheria	7(2)	1(1)	..	..	1(1)	..	..	..	9
Dysentery (Bacillary)	..	..	..	..	..	..	1	..	1
Encephalitis	1	1	..	..	..	..	..	..	2
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	1	..	..	..	3	..	..	4
Infective Hepatitis	87(41)	42(20)	..	18(4)	2(1)	7	1	..	157
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	3	..	3
Leptospirosis	..	..	1	..	..	..	..	..	1
Malaria	..	..	1(1)	..	..	..	..	..	1
Meningococcal Infection	2(1)	2	..	1(1)	..	1	..	..	6
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	1	2	..	1	..	1	..	..	5
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	73(45)	1(1)	22(16)	1	..	..	..	97
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	6(3)	15(12)	10(5)	1(1)	..	1	..	..	33
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	12	..	4	..	16
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	36(25)	9(6)	20(4)	3(2)	8(7)	2	..	..	78
Typhoid Fever	..	..	1	..	1	..	..	..	2
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

Robert Michael Coplans as Honorary Surgeon and Honorary Physician, respectively, to His Excellency the Governor-General are extended for a period of one year from 14th October, 1956.

Termination of Appointments.—The appointment of William Aloysius O'Brien as Surgeon Lieutenant (for Short Service) is terminated, dated 11th October, 1956.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).

The resignation of 5/8053 Captain G. M. A. Lynch of his commission is accepted, 21st September, 1956.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—1/39155 Captain B. H. Gutteridge is seconded whilst undergoing post-graduate studies in the United Kingdom, 1st July, 1955.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—The provisional rank of 2/127045 Captain H. M. Learoyd is confirmed. 2/267193 Honorary Captain T. J. O'Neill is appointed from the Reserve of Officers, and to be Captain (provisionally), 14th August, 1956. To be Captain (provisionally), 28th September, 1956: 2/146608 Michael John Kevin Tarlinton.

Southern Command.

Royal Australian Army Medical Corps (Medical).—The following officers are appointed from the Reserve of Officers, and to be Captains (provisionally), 13th August, 1956: Honorary Captains 3/101838 P. E. Campbell and 3/101839 D. M. Ritchie. To be Captain (provisionally), 24th September, 1956: 3/101837 Edward Raymond Moran.

Western Command.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 28th September, 1956: 5/26553 Philip Daniel Goatcher.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

Eastern Command.—The resignation of Major S. P. Bellmaine of his commission is accepted, 31st July, 1956.

Southern Command.—To be Honorary Captains: Ian Edgeworth McInnes, 27th August, 1956, and Allan Noel Carter, 3rd September, 1956.

Central Command.—Honorary Captain D. B. McLeay is retired, 2nd December, 1955.

The following officers are placed upon the Retired List, with permission to retain their rank and wear the prescribed uniform:

Southern Command.—Colonel C. W. Nye, O.B.E., E.D., Majors H. L. Andrews, G. F. S. Davies, C. H. Fitts, A. J. G. Mackay, W. I. E. MacKenzie, F. C. H. Ross, J. J. Searby and G. G. R. Weigall, Captain (Honorary Major) A. L. B. Webb, Captains C. H. B. Adamson, V. B. Brenton, T. S. Burgess, E.D., W. L. Carrington, G. A. Cook, J. W. Cook, J. E. D. Crozier, G. M. Dallimore, A. P. J. Gorman, E. W. Hands, H. Smith and C. E. Willing, 11th June, 1956, Lieutenant-Colonel J. M. Buchanan, E.D., and Captain W. R. Angus, 1st August, 1956, Major C. M. Ley, 17th September, 1956, and Major K. Brennan, 25th September, 1956.

Western Command.—Lieutenant-Colonels E. W. Kyle and G. C. Moss, 24th May, 1956.

The following officers are retired:

Southern Command.—Honorary Captains T. L. Barker, G. F. Beck, G. F. Bennett, J. Mitchell, N. J. Parker, C. W. J. Rait, C. E. Richardson, H. E. Robinson and L. P. Waite, 11th June, 1956, A. R. Moreton, 1st August, 1956, J. G. Barnaby and C. H. Dickson, 17th September, 1956, and E. R. Hurley and J. E. Thomas, 25th September, 1956.

Western Command.—Honorary Captain F. G. Bell, 21st March, 1956.

Medical Appointments.

Dr. Máire Henley, Dr. G. J. Cousins and Dr. A. G. Wise have been appointed to the Department of Public Health of New South Wales.

Dr. D. R. Morgan has been appointed Medical Superintendent in the Division of Mental Hygiene, New South Wales Department of Public Health.

Deaths.

THE following deaths have been announced:

ROUTH.—Laurence Melville Routh, on November 10, 1956, at Melbourne.

DUNN.—William Alexander Dunn, on November 18, 1956, at Sydney.

Diary for the Month.

DEC. 4.—New South Wales Branch, B.M.A.: Organization and Science Committee.
DEC. 5.—Victorian Branch, B.M.A.: Branch Meeting.
DEC. 5.—Victorian Branch, B.M.A.: Branch Council.
DEC. 5.—Western Australian Branch, B.M.A.: Branch Council.
DEC. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
DEC. 12.—Victorian Branch, B.M.A.: Branch Council.
DEC. 12.—New South Wales Branch, B.M.A.: Clinical Meeting.
DEC. 13.—New South Wales Branch, B.M.A.: Branch Meeting.
DEC. 14.—Tasmanian Branch, B.M.A.: Branch Council.
DEC. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
DEC. 18.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

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